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Data for July 1978 -- June 1978
Explanation of Data Reports Issued as Number 402 (Supplement) February 1978

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Solar - Geophysical Data

NO. 408 AUGUST 1978

Part I (Prompt Reports)

DATA FOR
JULY 1978
JUNE 1978

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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No. 408

Issued in two parts

Helen E. Coffey, Editor

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Solar-Terrestrial Physics Division

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A = Part I, B = Part II.

---- = no data available.
blank = data not yet received.

JULY 1978 DATA

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ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE
JULY 1978

PRESTO MESSAGES (the RAPID report of major events).

BOULDER 08/2145Z SOFLARE M3/1B N18E79 08/1943Z DURATION 27 MINUTES. TENFLARE 230 FLUX UNITS 10/1959Z DURATION 47 MINUTES.
BOULDER 09/2200Z SOFLARE X3/2B N19E68 09/1804Z DURATION 31 MINUTES. TENFLARE 490 FLUX UNITS 09/1828Z DURATION 71 MINUTES. UMBRAL COVERAGE, PARALLEL RIBBONS.
BOULDER 10/1352Z SOFLARE X8/2B N18E60 10/0620Z DURATION 32 MINUTES. TENFLARE 2000 FLUX UNITS 10/0603Z DURATION 74 MINUTES.
BOULDER 11/0441Z SOFLARE M8/2B N17E49 11/0426Z IN PROGRESS 11/0441Z.
BOULDER 11/1300Z SOFLARE X15/2B N20E46 11/1043Z DURATION 157 MINUTES.
BOULDER 13/1300Z PROTON EVENT BEGAN AT 13/0330Z. 23 PROTONS/cm^2/sec/ster AT GREATER THAN 10 MEV at 13/1000Z. PROBABLE MAXIMUM AT 13/1000Z.
BOULDER 18/1645Z TENFLARE 880 FLUX UNITS 18/0016Z DURATION 4 MINUTES.
BOULDER 18/2156Z SOFLARE M5/2B N17W51 18/1922Z DURATION 37 MINUTES.
BOULDER 21/2049Z SOFLARE M8/1B N17W90 21/1857Z DURATION 34 MINUTES. TENFLAKE 140 FLUX UNITS 21/1853Z DUNATION 17 MINUTES.

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat°-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat°-Long	Desc*	Alert Situations
182	1	30	121	151	30	N19W74	4	0	0		30	N19W74	C.A.	SOLALERT 01/03
						N26W62	0	0	0			N26W62	Q	MAGALERT MINOR 01/02
						S18W57	0	0	0			S18W57	Q	
						N24W40	10	0	0			N24W40	A	
						N16E06	4	0	0			N16E06	Q	
						N18E18	4	0	0			N18E18	Q	
						S17E35	1	0	0			S17E35	Q	
						N20E66	3	0	0			N20E66	C.E.	
183	2	1	172	138	05	N18W87	4	1	0		1	N18W87	C.A.	SOLALERT
						N25W76	0	0	0			N25W76	Q	MAGNIL
						S20W72	2	0	0			S20W72	D.A.	
						N24W53	3	0	0			N24W53	C.A.	
						N18W05	1	0	0			N18W05	Q	
						N19E07	2	0	0			N19E07	Q	
						S16E24	0	0	0			S16E24	Q	
						N19E55	5	0	0			N19E55	E	
						S19E45	0	0	0			S19E45	Q	
						N15E14	0	0	0			N15E14	Q	
184	3	2	120	123	07	S19W85	2	1	0		2	S19W85	A	SOLALERT 03
						N22W66	2	0	0			N22W66	D.A.	MAGQUIET
						N14W01	2	0	0			N14W01	E	
						N19E43	1	0	0			N19E43	Q	
						S19E31	1	0	0			S19E31	Q	
						N27W01	0	0	0			N27W01	Q	
						N34E33	0	0	0			N34E33	Q	
						S25E03	0	0	0			S25E03	Q	
185	4	3	105	113	06	N21W82	0	0	0	AN SC WAS OBSERVED	3	N21W82	Q	SOLNIL
						N18W12	1	0	0	AT 03/2305Z		N18W12	Q	MAGQUIET
						N19E29	0	0	0			N19E29	Q	
						S19E16	0	0	0			S19E16	Q	
						N26W15	0	0	0			N26W15	Q	
						S24W11	0	0	0			S24W11	Q	
						N20E07	0	0	0			N20E07	Q	
186	5	4	50	114	33	N19E14	0	0	0	MAGSTORM MINOR	4	N19E14	Q	SOLQUIET
						N26W28	3	0	0	BEGAN WITH SC AT		N26W28	Q	MAGALERT MINOR 05
						S25W23	4	0	0	03/2305Z		S25W23	Q	
187	6	5	114	115	30	N19E04	0	0	0		5	N19E04	Q	SOLQUIET
						N25W41	1	0	0			N25W41	E	MAGALERT 06/07
						S27W36	5	0	0			S27W36	D.A.	
						N21W18	0	0	0			N21W18	Q	
						N08W51	0	0	0			N08W51	Q	
						N15W61	0	0	0			N15W61	Q	
						N20E21	0	0	0			N20E21	Q	
188	7	6	131	117	10	N27W54	0	0	0		6	N27W54	Q	SOLQUIET
						S26W50	4	1	0			S26W50	D.A.	MAGNIL
						N19W09	0	0	0			N19W09	Q	
						S12E11	0	0	0			S12E11	Q	
						S24E14	0	0	0			S24E14	Q	
						S20E32	0	0	0			S20E32	Q	
						S17E70	2	0	0			S17E70	Q	
						N17E74	0	0	0			N17E74	Q	
189	8	7	149	125	12	N27W66	0	0	0		7	N27W66	Q	SOLALERT
						S27W63	5	0	0			S27W63	C.A.	MAGQUIET
						S16W53	7	1	0			S16W53	D.A.	
						N18W41	0	0	0			N18W41	Q	
						N19W22	0	0	0			N19W22	Q	
						S23W00	1	0	0			S23W00	Q	
						S19E18	0	0	0			S19E18	Q	
						S18E60	4	1	0			S18E60	D.A.	
						N27E60	0	0	0			N27E60	Q	
190	9	* 8	210	132	13	N28W80	0	0	0	PRESTO SOFLARE	8	N28W80	Q	SOLALERT
						S26W75	3	0	0	M3/1B N18E79		S26W75	D.A.	MAGQUIET
						S15W66	10	0	0	08/1943Z 27 MINUTE		S16W66	E	
						N18W54	0	0	0	DURATION. TENFLARE		N18W54	Q	
						N20W36	0	0	0	230 FLUX UNITS		N20W36	Q	
						S20E05	1	0	0	08/1949Z DURATION		S20E05	E	
						N27E46	0	0	0	57 MINUTES.		N27E46	Q	
						S18E47	1	0	0			S18E47	E	
						S28E67	0	0	0			S28E67	Q	
						N16E76	2	1	0			N16E76	C.A.	
191	10	9	214	146	06	N18E62	13	2	1	SOFLARE X3/2B	9	N18E62	P	SOLALERT
						S17W82	1	0	0	N19E68, 09/1804		S17W82	Q	MAGQUIET
						N19W49	0	0	0	DURATION 31 MINUTES		N19W49	Q	
						S27W87	1	1	0	TENFLARE 490 FLUX		S27W87	E	
						S19E32	2	1	0	UNITS, 09/1828Z		S19E32	E	
						N27E33	0	0	0	DURATION 71 MINUTES		N27E33	Q	
						S20W07	2	0	0	UMBRAL COVERAGE,		S20W07	Q	
						S29E50	0	0	0	PARALLEL RIBBONS		S29E50	Q	
						S21E20	0	0	0			S21E20	Q	
						S30W25	0	0	0			S30W25	Q	
						S31E51	0	0	0			S31E51	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

JULY 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of obser-vation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
192	11	10	154	153	10	N20W63	1	0	0	SOFLARE X8/2B	10	N20W63	Q	SOALERT 11/XX
						N20W45	1	0	0	DURATION 32		N20W45	Q	MAGALERT 12/13
						S22E17	3	1	0	MINUTES.		S22E17	E	
						S19W20	0	0	0	TENFLARE 2000 FLUX		S19W20	Q	
						S25E37	0	0	0	UNITS 10/0603Z		S25E37	Q	
						N20E50	12	2	1	DURATION 74		N20E50	A	
						S30W36	0	0	0	MINUTES.		S30W36	Q	
						N27E49	0	0	0			N27E49	Q	
						N17E84	0	0	0			N17E84	Q	
193	12	11	210	164	07	N20W75	0	0	0	SOFLARE MB/2B	11	N20W75	Q	SOLALERT 12/XX
						N20W59	4	0	0	N17E49, 11/0426Z		N20W59	E	MAGALERT 12/XX
						S18E06	0	0	0	IN PROGRESS		S18E06	Q	
						S20W34	1	0	0	11/0441Z. SOFLARE		S20W34	Q	
						N18E36	22	4	2	X15/2B N20E46,		N18E36	A	
						S21W48	0	0	0	11/1043Z. TENFLARE		S21W48	Q	
						N26E36	0	0	0	4900 FLUX UNITS		N26E36	Q	
						N16E64	1	1	0	11/1050Z. DURATION		N16E64	Q	
						S12E52	0	0	0	104 MINUTES.		S12E52	Q	
										LARGEST X-RAY				
										FLARE RECORDED.				
										SATELLITE SENSORS				
										SATURATED FOR 10				
										MINUTES.				
194	13	12	159	175	03	N20W74	9	0	0		12	N20W74	E	SOLALERT 13/XX
						N19W07	0	0	0			N19W07	Q	MAGALERT 13/XX
						S21W46	3	0	0			S21W46	E	
						N18E23	16	5	0			N18E23	P	
						S20W61	0	0	0			S20W61	Q	
						N25E23	0	0	0			N25E23	Q	
						N17E52	1	0	0			N17E52	Q	
						N11E38	0	0	0			N11E38	Q	
195	14	13	135	160	11	N21W81	1	0	0	PRESTO BOULDER	13	N21W81	C.A.	SOLALERT 14/XX
						S17W18	0	0	0	PROTON EVENT BEGAN		S17W18	Q	MAGALERT 14/XX
						S20W59	0	0	0	13/0300Z. 23		S20W59	E	
						N18E10	7	0	0	PROTONS /cm²/sec/		N18E10	P	
						N23E08	0	0	0	ster AT >10MEV		N23E08	Q	
						N15E38	0	0	0	AT 13/1000Z.		N15E38	Q	
						N20E73	0	0	0	PROBABLE MAX AT		N20E73	Q	
										13/1000Z. PRESTO				
										MEUDON MAGSTORM				
										SSC 13/0014Z.				
196	15	14	176	154	45	S19W33	0	0	0		14	S19W33	Q	SOLALERT 15/XX
						S19E74	1	0	0			S19E74	E	MAGALERT 15/XX
						N18W04	6	0	0			N18W04	P	
						N23W03	0	0	0			N23W03	Q	
						N15E23	0	0	0			N15E23	Q	
						N20E57	1	0	0			N20E57	Q	
						S24E45	3	0	0			S24E45	E	
						S28W05	0	0	0			S28W05	Q	
						N22W10	0	0	0			N22W10	Q	
197	16	15	168	164	05	S18W45	0	0	0		15	S18W45	Q	SOLALERT 16/XX
						S21W84	0	0	0			S21W84	Q	MAGNIL
						N16W14	9	2	0			N16W14	P	
						N16E11	0	0	0			N16E11	Q	
						N19E43	2	0	0			N19E43	E	
						S24E30	2	0	0			S24E30	D.A.	
						S28W25	0	0	0			S28W25	Q	
						N31E09	0	0	0			N31E09	Q	
						N13E29	0	0	0			N13E29	Q	
198	17	16	145	158	06	N17W27	6	0	0		16	N17W27	C.P.	SOLALERT 17/XX
						N15W00	0	0	0			N15W00	Q	MAGUIET
						N18E31	1	0	0			N18E31	E	
						S23E18	1	0	0			S23E18	E	
						N12E16	0	0	0			N12E16	Q	
199	18	17	170	156	07	N18W41	6	0	0		17	N18W41	C.P.	SOLALERT 18/XX
						N15W14	3	0	0			N15W14	E	MAGALERT 18/XX
						N18E16	3	0	0			N18E16	E	
						S23E04	0	0	0			S23E04	Q	
						N12E03	0	0	0			N12E03	Q	
						N12W12	0	0	0			N12W12	Q	
						S26E52	0	0	0			S26E52	Q	
						N23E52	0	0	0			N23E52	Q	
						N13E23	0	0	0			N13E23	Q	
200	19	18	145	152	11	N19W53	7	1	0	SOFLARE M5/2B	18	N19W53	C.P.	SOLALERT 19/XX
						N15W29	1	0	0	N17W51, 18/1922Z		N15W29	E	MAGALERT 19/XX
						N19E03	0	0	0	DURATION 37 MINUTES		N19E03	Q	
						S23W11	0	0	0	TENFLARE 880 FLUX		S23W11	Q	
						N13W11	0	0	0	UNITS 18/0016Z		N13W11	Q	
						N12W22	0	0	0	DURATION 4 MINUTES		N12W22	Q	
						S26E43	0	0	0	MINOR GEOMAGNETIC		S26E43	Q	
						N20E52	0	0	0	STORM STARTED		N20E52	Q	
										18/2230Z				

SUMMARY

Message serial number
201
202
203
204
205
206
207
208
209
210
211
212
213

* Q=Quiet

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

JULY 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location	No. of Flares				Date	Location	Desc*	
						Lat-Long	Total	M	X			Lat-Long		
201	20	19	141	144	16	N17W66	2	0	0		19	N17W66	P	PROTON FLARE ALERT 20/XX
						N16W40	0	0	0			N16W40	Q	MAGALERT MINOR 20
						N19W10	5	0	0			N19W10	E	
						S22W23	0	0	0			S22W23	Q	
						N13W23	0	0	0			N13W23	Q	
						N11W33	0	0	0			N11W33	Q	
						S27E29	0	0	0			S27E29	Q	
						N16W04	0	0	0			N16W04	Q	
						S38W21	0	0	0			S38W21	Q	
						S17E28	0	0	0			S17E28	Q	
202	21	20	81	141	10	N17W81	7	1	0		20	N17W81	P	PROTON FLARE ALERT PIANO 21
						N18W23	1	0	0			N18W23	E	MAGALERT MINOR 21/XX
						N17W53	1	0	0			N17W53	Q	
						S23W35	1	0	0			S23W35	Q	
						N11W45	0	0	0			N11W45	Q	
						S38W33	0	0	0			S38W33	Q	
203	22	21	104	136	05	N18W90	4	1	0	SOFLARE M8/1B N18W90, 21/1852Z DURATION 34 MINUTES TENFLARE 140 FLUX UNITS 21/1853Z LASTED 17 MINUTES.	21	N18W90	Q	SOLNIL
						N20W38	0	0	0			N20W38	E	MAGALERT MINOR 22/23
						S23W49	0	0	0			S23W49	Q	
						N11W62	2	0	0			N11W62	E	
						N17W66	3	0	0			N17W66	Q	
						N14W28	0	0	0			N14W28	Q	
						S19W00	0	0	0			S19W00	Q	
						S38W48	0	0	0			S38W48	Q	
204	23	22	101	123	10	N19W52	0	0	0		22	N19W52	E	SOLQUIET
						S23W61	1	1	0			S23W61	Q	MAGNIL
						N16W76	0	0	0			N16W76	Q	
						N13W47	0	0	0			N13W47	A	
						S39W60	0	0	0			S39W60	Q	
						S19W14	0	0	0			S19W14	E	
						N18E35	0	0	0			N18E35	Q	
						N26E47	0	0	0			N26E47	Q	
205	24	23	75	120	10	N19W64	1	0	0		23	N19W64	E	SOLQUIET
						S22W76	0	0	0			S22W76	Q	MAGQUIET
						N13W59	0	0	0			N13W59	E	
						N18E19	0	0	0			N18E19	Q	
						N26E34	0	0	0			N26E34	Q	
206	25	24	39	115	05	N18W80	0	0	0		24	N18W80	Q	SOLQUIET
						N13W73	0	0	0			N13W73	Q	MAGQUIET
						N25E21	0	0	0			N25E21	Q	
207	26	25	48	110	05	N18W07	0	0	0		25	N18W07	Q	SOLQUIET
						N17E07	0	0	0			N17E07	Q	MAGQUIET
						S26W80	2	0	0			S26W80	E	
						S12E46	0	0	0			S12E46	Q	
208	27	26	23	109	05	N27W06	0	0	0		26	N27W06	Q	SOLQUIET
						N13W64	0	0	0			N13W64	Q	MAGQUIET
209	28	27	38	107	04	N27W17	0	0	0	TENFLARE TORUN 27/0608Z 140 FLUX UNITS, DURATION 4 MINUTES.	27	N27W17	Q	SOLQUIET
						N36E77	2	0	0			N36E77	Q	MAGQUIET
						N20E18	0	0	0			N20E18	Q	
210	29	28	60	107	10	N27W30	0	0	0		28	N27W30	Q	SOLQUIET
						N36E63	0	0	0			N36E63	Q	MAGQUIET
						N20E67	0	0	0			N20E67	Q	
						N18E50	0	0	0			N18E50	Q	
						S21E78	0	0	0			S21E78	Q	
211	30	29	73	106	06	N27W41	0	0	0		29	N27W41	Q	SOLQUIET
						N36E51	0	0	0			N36E51	Q	MAGQUIET
						N19E54	2	0	0			N19E54	Q	
						N18E35	0	0	0			N18E35	Q	
						S19E64	0	0	0			S19E64	Q	
212	31	30	62	106	03	N36E40	1	0	0		30	N36E40	Q	SOLQUIET
						N18E38	0	0	0			N18E38	Q	MAGQUIET
						N18E18	0	0	0			N18E18	Q	
						S21E49	2	0	0			S21E49	Q	
213	01	31	47	106	02	N37E27	0	0	0		31	N37E27	Q	SOLQUIET
						N21E27	0	0	0			N21E27	Q	MAGQUIET
						S22E35	0	0	0			S22E35	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_z

	1977 FINAL					1978 PROVISIONAL						
DAY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
1	17	22	43	44	28	84	128	93	78	77	119	46
2	15	29	37	40	20	88	128	83	68	85	93	61
3	24	29	47	25	31	102	131	95	71	91	74	47
4	19	25	47	22	47	102	136	103	75	76	60	34
5	23	28	48	25	58	73	137	76	94	74	51	54
6	26	26	55	27	58	69	129	67	92	73	29	57
7	28	25	57	34	55	42	121	90	88	70	39	84
8	25	18	52	27	45	36	89	99	105	56	45	105
9	30	38	47	31	58	36	94	85	126	59	36	108
10	25	48	38	25	75	15	96	92	111	57	29	115
11	23	45	28	24	71	18	95	85	109	63	57	127
12	29	51	33	27	62	26	92	78	107	65	62	111
13	48	48	53	28	44	26	93	65	93	72	56	114
14	40	47	48	31	37	36	82	62	75	72	62	109
15	42	53	54	39	41	30	59	72	61	78	89	102
16	38	56	53	49	39	23	64	70	85	91	97	110
17	36	53	51	51	29	24	56	66	99	79	103	98
18	40	60	50	54	33	14	55	72	100	85	115	78
19	35	59	54	52	48	8	53	64	107	84	109	74
20	33	60	54	38	23	7	52	51	115	74	109	76
21	33	58	42	32	23	20	63	77	112	73	154	77
22	38	42	35	28	17	30	74	82	109	73	158	48
23	15	41	30	24	23	43	69	85	105	72	158	33
24	19	48	29	18	31	37	78	82	102	82	154	36
25	25	46	28	18	35	32	94	70	139	86	135	30
26	34	49	38	9	41	47	86	53	115	84	152	13
27	38	54	38	14	50	69	79	50	98	97	134	21
28	36	61	37	9	45	79	88	49	75	90	130	31
29	40	64	42	10	58	90		48	72	103	115	48
30	36	60	45	23	64	104		44	70	107	99	35
31	31		52		67	118		70		109		36
MEAN	30.1	44.0	43.8	29.1	43.2	49.3	89.8	73.5	94.7	79.3	94.1	68.4

1976 yearly mean = 12.6

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

	1977					1978						
DAY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
1	83.8*	83.1	93.8*	94.4	88.4	126.9*	139.1	136.3	130.0	181.4	149.1	142.9
2	82.8	84.2	93.2	93.6	91.2	133.9	152.6	141.1	129.8	183.0	147.0*	127.6
3	82.3	87.2	97.4	90.4	93.7	130.2	156.6*	146.6	134.5	182.2A	130.8	116.5
4	82.9*	84.2	98.8	89.4	95.9	124.8	154.8	148.4	143.3*	178.4	118.6	117.4
5	86.4	85.6	104.0*	90.6	96.9	119.2	159.0	154.5	146.7*	173.9*	116.9	118.9
6	88.2	84.9	103.5	91.1	102.0*	118.7*	156.1	162.8	145.3*	173.1	109.8	119.3*
7	86.9	89.3	105.5	90.2	105.5	111.6	157.3	165.2	146.9	162.6*	110.6	128.9
8	85.1	91.6	103.8	90.3	106.7	102.8	157.8*	168.7	148.6	143.4	109.3	135.9
9	85.9	95.9	100.7	91.1	112.6*	97.0	155.2	163.7	156.1	135.1	106.5	147.1*
10	87.2	99.8	96.4	93.1	114.7	93.5	148.7	179.1	159.4	129.5	108.4	156.0*
11	87.6	104.6	95.3	94.9	107.4	93.1	154.2	175.2	162.8*	133.8	113.2	163.2*
12	86.5	107.8	100.8	91.4	111.0	92.1	159.0	169.8	156.2	138.2	116.4*	174.2*
13	89.0	112.9	98.5	94.8	108.6	90.3	151.2	168.9	145.6	140.2	120.3*	165.5
14	87.5	116.2	98.9	97.9	93.7*	88.6	148.4	160.5	139.1	143.7	126.4*	163.1
15	86.9	120.7	98.2	97.9	92.5	89.6	136.8	154.2	141.4	146.1	132.5	169.5
16	87.3	120.4	96.8	95.9	92.5	86.4	138.2	143.3	137.6	147.8*	139.5*	163.4
17	87.1	120.6	94.9	100.4	91.1	83.8	125.9	135.4	133.4	143.8	149.0	159.5
18	88.6	120.5	95.4	102.0*	93.6	84.7	124.9	132.3	134.1	135.6	153.5*	154.1*
19	87.8	104.5	105.8	99.2	91.8	85.4	119.1	128.1	139.5*	133.6	162.8*	148.6
20	88.7	100.8	99.6*	95.7*	88.7	87.8	122.2	125.3	138.1	132.3*	174.2	142.9*
21	90.8	104.9*	98.6*	92.8	87.8	91.4	122.2	118.2	136.4*	132.7	185.4*	140.2
22	89.6	102.4	93.9	89.3	89.9	96.9	127.7	117.8	146.4	135.7*	198.3	127.8
23	86.8	99.3	87.3	88.8	91.2	99.6	131.8	116.4	162.9	142.9*	196.7	123.4*
24	86.8	100.6	88.3	86.7	93.9	100.4	135.6	117.5	159.8	146.5*	194.8	118.5
25	87.7	98.8	88.1	84.7	96.3	103.3	139.3	118.2	159.1*	147.6	183.5	113.7
26	86.4	99.4	88.6	84.1	99.3	112.7	134.8	112.5	166.7	152.8	182.4*	112.2
27	85.4	100.8	88.5	83.8	98.3	116.4	137.5	114.1	172.8	150.6*	179.5	110.8
28	82.4	100.8	90.3*	85.6	98.9	127.7*	135.4	112.7	176.6*	147.1*	174.1	109.9
29	86.1	99.4	90.3	85.6	105.6*	132.2*		111.1	185.2	148.6	167.4	109.2
30	85.5	97.7	94.9	85.3	114.7	134.9		115.4*	182.1*	147.2*	154.6*	109.2
31	84.7		95.9		128.2	133.3*		124.5		152.6		108.8
MEAN	86.4	100.9	96.3	91.6	98.9	106.1	141.8	140.3	150.5	149.7	146.8	135.4

* adjusted for burst
A = interpolated data point

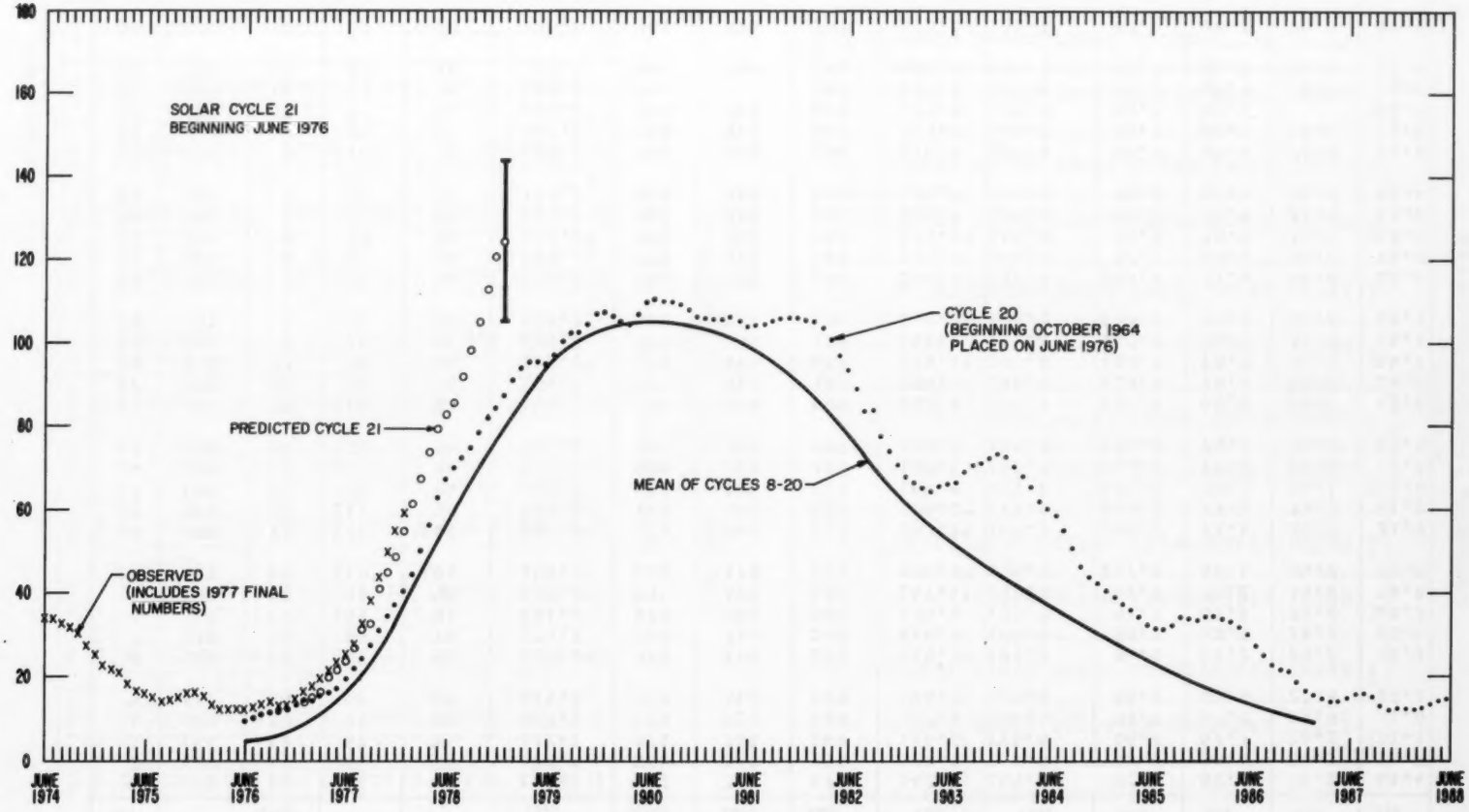
DAILY SOLAR INDICES

JULY 1978

JUL 1978	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	182	10	46	49	138.2	592	336	173	142.9	144.9	97.9	62.7	28.1	11.4
2	183	11	61	39	123.4	584	317	157	127.6	127.0	88.3	65.4	27.3	11.7
3	184	12	47	51	112.7	571	308	149	116.5	116.6	86.2	67.3	28.2	11.1
4	185	13	34	40	113.5	574	310	148	117.4	114.4	90.5	63.2	29.9	11.8
5	186	14	54	48	115.0	577	312	149	118.9	119.8	86.0	63.6	27.8	12.1
6	187	15	57	58	115.4*	582	315	153	119.3*	120.0	84.9	61.2	29.2	12.3
7	188	16	84	76	124.7	580	314	160	128.9	125.5	88.1	63.9	28.3	12.4
8	189	17	105	91	131.4	576	332	169	135.9	133.7	91.7	67.8	34.2	18.7
9	190	18	108	96	142.3*	594	355	184	147.1*	147.2	101.3	70.2	33.4	14.0
10	191	19	115	101	150.9*	610	379	203	156.0*	156.4	107.0	68.1	45.0	73.9
11	192	20	127	109	157.8*	621	381	213	163.2*	165.2	108.3	71.1	30.7	31.5
12	193	21	111	90	168.6*	623	399	225	174.2*	175.0	112.2	73.5	33.2	21.2
13	194	22	114	94	160.2	600	376	213	165.5	161.0	109.2	72.3	33.1	13.6
14	195	23	109	94	157.9	595	370	208	163.1	163.3	111.6	70.2	27.6	13.7
15	196	24	102	85	164.1	593	365	199	169.5	166.3	122.3	70.8	32.3	13.5
16	197	25	110	87	158.2	590	358	196	163.4	165.0	117.8	69.8	29.2	12.0
17	198	26	98	79	154.4	587	353	185	159.5	154.0	119.9	70.8	29.0	13.2
18	199	27	78	68	149.2*	599	355	188	154.1*	155.6	112.7	70.7	32.5	14.7
19	200	1	74	61	143.9	592	344	179	148.6	145.8	110.3	76.4	33.0	14.1
20	201	2	76	63	138.3*	579	337	176	142.9*	141.2	107.5	74.0	33.2	13.9
21	202	3	77	56	135.9	584	333	171	140.2	133.7	105.8	71.4	26.8	12.4
22	203	4	48	36	123.1	575	313	155	127.0	124.0	97.2	69.4	28.7	11.9
23	204	5	33	30	119.6*	572	311	152	123.4*	119.4	93.9	70.5	31.3	13.4
24	205	6	38	28	114.8	567	304	148	118.5	115.4	90.5	72.9	28.9	13.2
25	206	7	30	22	110.2	564	303	146	113.7	111.8	89.9	67.7	32.2	12.4
26	207	8	13	0	108.7	563	310	144	112.2	107.4	86.2	65.6	27.9	11.6
27	208	9	21	15	107.5	556	300	141	110.8	106.3	84.0	63.2	28.4	11.5
28	209	10	31	31	106.6	560	308	143	109.9	105.4	82.5	68.8		11.2
29	210	11	48	36	105.9	564		142	109.2	105.4	80.9	65.0	28.5	11.4
30	211	12	35	36	105.9	563	299	141	109.2	107.8	80.7	61.9	26.9	11.6
31	212	13	36	33	105.6	561	304	142	108.8	106.7	83.5	66.3	26.8	11.0
MEAN			68.4	58.1	131.1	582	333	169	135.4	133.6	97.7	68.2	30.4	12.7

* Adjusted for burst.

Note: Data gaps in AFGL Sagamore Hill are due to equipment problems.



OBSERVED AND PREDICTED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.2	13.2	12.2	12.6	12.5	12.2	12.9	14.0	14.3	13.4	13.5	14.8
1977	16.7	18.1	20.0	22.2	24.2	26.3	28.8	33.0	38.5	44.6	50.5	55.4
1978	59.6	65.6	71.6	77.9	84.9	91.0	96.0	100.5	104.7	108.5	113.0	119.3
		(2)	(5)	(7)	(9)	(11)	(14)	(17)	(20)	(21)	(20)	(19)
1979	124.6	129.1	133.3	136.2	138.8	143.3	147.7	150.5	152.1	152.7	152.7	151.8
	(19)	(20)	(22)	(26)	(29)	(31)	(33)	(35)	(38)	(41)	(43)	(45)
1980	150.2	148.6	147.9	148.4	147.6	144.3	140.6	137.6	136.0	135.1	133.6	132.1
	(45)	(45)	(43)	(42)	(44)	(45)	(47)	(47)	(47)	(48)	(49)	(52)
1981	131.9	131.2	128.7	125.6	123.2	121.0	120.1	120.2	119.5	118.1	115.9	112.7
	(54)	(54)	(52)	(51)	(50)	(49)	(48)	(46)	(46)	(46)	(44)	(42)
1982	109.4	106.2	103.7	101.9	99.6	96.9	93.0	88.5	84.5	80.1	76.9	73.4
	(40)	(39)	(38)	(36)	(34)	(33)	(31)	(29)	(27)	(24)	(22)	(22)
1983	69.5	66.7	64.6	62.4	60.2	57.9	55.9	53.9	52.1	50.8	49.9	49.2
	(21)	(21)	(22)	(22)	(23)	(23)	(24)	(26)	(27)	(29)	(31)	(31)
1984	48.0	46.2	43.5	40.3	37.7	36.4	35.3	33.7	32.3	31.4	30.2	28.7
	(31)	(30)	(29)	(29)	(30)	(31)	(32)	(31)	(30)	(29)	(28)	(27)
1985	27.7	27.0	26.1	25.7	25.0	24.1	23.4	22.6	21.8	20.9	20.0	19.5
	(27)	(26)	(26)	(26)	(26)	(25)	(23)	(22)	(22)	(23)	(24)	(24)
1986	19.1	18.5	17.9	17.0	15.8	14.7	13.8	13.3	13.1	12.8	12.6	12.4
	(24)	(24)	(24)	(23)	(22)	(21)	(20)	(19)	(17)	(16)	(15)	(13)
1987	12.7	13.2	14.0	14.9	15.9							
	(12)	(11)	(11)	(11)	(12)							

The table gives observed Zürich smoothed sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1977 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1978 are received. The numbers after the vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1978). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

The McNish-Lincoln method is very sensitive to the identification of a minimum epoch. In SGD 390-401 issues, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Latest studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we have adopted a June 1976 mimimum.

*Prediction of Sunspot Maximum -- The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly towards the mean value. Combining this McNish-Lincoln prediction of sunspot maximum with the Ohl method (as done by Sargent, see *Explanation of Data Reports*, February 1978) indicates that the most probable value for sunspot maximum is 153 ± 35.

Errata: A slight error crept into the initial calculations for the smoothed (running average) Zürich sunspot numbers for October - December 1977. Incorrect values first began appearing in SGD, 405 Part I, page 11, May 1978 issue. The October 1977 incorrect number of "44.0" should be "44.6," for November 1977 "49.9" should be "50.5," and for December 1977 "54.8" should be "55.4."

Hα SOLAR FLARES

JULY 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE JUL	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	NOAA PLAGE REGION	CMP DAY			CORD.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
HANI	01	0304	0306	0316	N25	W40	.763		29.1	12	SN		P		120	1.7	
MITK	04	0534E	0538	0600D	N27	W19	.615		2.8	26D	SB		C	0538			D
HANI	04	0537E	0539	0557D	N26	W17	.591		3.0	20D	SF		V		110	1.2	
BUCA	04	0730E		0800	N28	W19	.627		2.9	30D	SN		C	0740	107	1.3	
HANI	04	2321E	2321U	2332	S25	W23	.484		3.2	11D	SF		V		20	.2	
HANI	04	2223E	2223U	2229	S25	W24	.495		3.1	6D	SF		V		15	1.6	
RAMY	05	1118	1140	1409	S26	W28	.547		3.4	171	SB	4	C		113		Z F
MCMA	05	1211E		1305	S27	W29	.566	15389	3.3	54D	SB		P	1211	80	1.1	E
MCMA	05	1307	1328	1345	N27	W37	.753	15388	2.8	38	SB		C	1328	45	.6	EL
RAMY	05	1311	1329	1339	N27	W36	.745		2.8	28	SB	4	C		46		
RAMY	05	1311	1312	1339	N27	W36	.745		2.8	28	SN	4	C		26		
RAMY	05	1507	1508	1522	N27	W37	.753		2.9	15	SB	4	C		52		F
MCMA	05	1508E		1530D	N27	W37	.753	15388	2.9	22D	SN		C	1508	80	1.2	E
MCMA	05	1614	1619	1624	N27	W38	.762	15388	2.8	10	SN		C	1619	70	1.0	E
RAMY	05	1617	1618	1631	N27	W37	.753		2.9	14	SB	4	C		26		
RAMY	05	1635	1637	1710	S26	W31	.581		3.4	35	SB	3	C		20		F
MCMA	05	1700E		1708D	S27	W33	.610	15389	3.2	8D	SN		C	1708	40	.6	E
MCMA	05	1733E		1800	S21	W02	.256	15386	5.6	27D	SF		C	1736	60	.7	E
PALE	05	1748	1808	1959	S27	W33	.610		3.3	131	SB	3	C		188		DE F
MCMA	05	1750E	1803	2028D	S27	W33	.610	15389	3.3	158D	SB		C	1803	90	1.4	FH
PALE	05	2021	2022	2028	S27	W33	.610		3.4	7	SN	3	C		51		H F
PALE	05	2039	2043	2046	S27	W33	.610		3.4	7	SN	3	C		22		F
PALE	05	2058	2102	2107	S27	W33	.610		3.4	9	SN	3	C		51		DE
MCMA	05	2112	2117	2128	N27	W40	.778	15388	2.9	16	SN		C	2117	25	.4	D
PALE	05	2114	2123	2133	N26	W40	.771		2.9	19	SN	3	C		48		DE
BUCA	06	0735		0746	S26	W39	.670		3.4	11	SF		C	0740	64	1.0	
MCMA	06	1131E		1140	S28	W42	.710	15389	3.3	9D	SF		C	1131	25	.4	D
MCMA	06	1206	1209	1235	S28	W42	.710	15389	3.4	29	SN		C	1209	35	.5	E
RAMY	06	1214	1215	1409	S26	W42	.702		3.4	115	SN	3	C		51		
MCMA	06	1258	1300	1304	S28	W42	.710	15389	3.4	6	SN		C	1300	30	.5	E
RAMY	06	1414	1414	1419	S26	W42	.702		3.4	5	SN	3	C		16		
MCMA	06	1439	1442	1455	S21	E38	.637	15391	9.5	16	SF		C	1442	20	.3	D
RAMY	06	1502	1512	1612	S26	W43	.712		3.4	70	SN	3	C		152		FDE
MCMA	06	1510	1513	1514D	S28	W43	.720	15389	3.4	4D	SN		C	1513	35	.5	E
MCMA	06	1550	1555	1625	S21	E38	.637	15391	9.5	35	SN		C	1551	30	.4	E
RAMY	06	1639	1640	1644	N 9	W62	.896		2.0	5	SN	3	C		16		F
MCMA	06	1716	1724	1735	S28	W43	.720	15389	3.5	19	SF		C	1724	30	.5	E
RAMY	06	1730	1740	1805D	S27	W46	.747		3.3	35D	SN	3	C		25		F
RAMY	06	1730	1731	1805D	S27	W46	.747		3.3	35D	SF	3	C		20		F
MCMA	06	1742	1746	1814	S27	W47	.756	15389	3.2	32	SF		C	1746	35	.6	D
MCMA	06	1753	1754	1815	S21	E36	.613	15391	9.4	22	SF		C	1754	30	.4	E
MCMA	06	1855E	1907	1940	S20	E88	.998	15397	13.4	45D	SN		C	1907			D
MCMA	06	1934	1935	1938	S21	E35	.600	15391	9.4	4	SN		C	1935	15	.2	D
MCMA	06	2028	2035	2050	S27	W48	.766	15389	3.3	22	SN		C	2035	40	.7	E
MCMA	06	2110	2115	2125	S19	E77	.969	15397	12.7	15	SN		C	2115			E
PALE	07	0109E	0109U	0132	S17	E71	.940		12.4	23D	SN	3	C		31		DE
BUCA	07	0650	0654	0705	S20	E70	.934		12.5	15	SN		C	0654	53		
TEHR	07	1112	1115	1131	S26	W56	.836		3.3	19	SN	2	C		64		F
TEHR	07	1212E	1215	1231D	N18	E64	.925	15398	12.3	19D	1B	2	C		159		F
MCMA	07	1312	1315	1325	N24	W62	.925	15388	2.9	13	SF		C	1315	50	1.2	E
MCMA	07	1424	1426	1432	S16	W49	.753	15384	3.9	8	SF		C	1426	50	.9	E
MCMA	07	1437	1443	1535	S27	W57	.846	15389	3.3	58	SB		C	1443	60	1.5	E
MCMA	07	1526	1535	1546	S16	W49	.753	15384	4.0	20	SN		C	1535	50	.9	E
MCMA	07	1552	1604	1635	S27	W57	.846	15389	3.4	43	SF		C	1604	25	.6	DK
MCMA	07	1619	1622	1632	S21	E23	.448	15391	9.4	13	SN		C	1622	30	.4	E
MCMA	07	1620		1800	S16	W50	.764	15384	3.9	100	SN		C	1700	60	1.1	E
MCMA	07	1622	1626	1640	S22	E66	.909	15397	12.6	18	SN		C	1626	30	.9	E
MCMA	07	1636	1643	1710	S27	W58	.854	15389	3.3	34	SN		C	1643	70	1.7	E
PALE	07	1647E	1659	1709	S27	W61	.877		3.1	22D	SN	3	C		51		DE
MCMA	07	1656	1700	1706	S22	E66	.909	15397	12.7	10	SN		C	1700	15	.5	D
PALE	07	1710	1717	1722	S16	W51	.775		3.9	12	SN	3	C		25		DE
PALE	07	1728	1804U	1804D	S16	W51	.775		3.9	36D	SN	3	C		37		DE
RAMY	07	1748	1802	1830	S17	W54	.807		3.7	42	SN	3	C		80		
RAMY	07	1802	1827	1830	S27	W59	.862		3.3	28	SB	3	C		63		
MCMA	07	1823		1850	N16	E90	1.000	15403	14.5	27	SN		C				
PALE	08	0210	0219	0229	S16	W56	.825		3.9	19	SN	3	C		65		FDE
RAMY	08	1225	1227	1251	S16	W61	.869		3.9	26	SN	3	C		55		F

Hα SOLAR FLARES

JULY 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS'			REMARKS
	DATE JUL	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		CORD.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
MCMA	08	1251	1255	1310	S16	W62	.878	15384	3.9	19	SF		C	1255	50	1.2	E
RAMY	08	1302	1303	1314	S16	W62	.878		3.9	12	SN	3	C		78		F
RAMY	08	1301	1304	1314	S26	W70	.935		3.3	13	SN	3	C		22		F
RAMY	08	1334	1335	1353	S16	W62	.878		3.9	19	SN	3	C		32		F
MCMA	08	1407E		1419	N15	E85	.999	15403	15.0	12D	SN		C	1410			D
RAMY	08	1434	1435	1438	S16	W62	.878		4.0	4	SN	3	C		33		F
RAMY	08	1444	1445	1448	S19	E53	.798		12.6	4	SN	3	C		20		
MCMA	08	1444E	1446	1451	S19	E49	.757	15397	12.3	7D	SN		C	1446	25	.4	D
RAMY	08	1449	1450	1454	S26	W71	.940		3.3	5	SN	3	C		14		
RAMY	08	1458	1500	1509	S26	W71	.940		3.3	11	SN	3	C		21		
PALE	08	1947E	1951U	2024	N18	E79	.989	15403	14.7	37D	2B	3	C		230		FDE
PALE	08	2003	2008	2044	S16	W65	.901		4.0	41	SB	3	C		41		DE
MCMA	09	1133E	1145	1411D	N18	E72	.966	15403	14.9	158D	1B		C	1145	70	2.1	EKZ
TEHR	09	1141	1145	1203	N18	E71	.962		14.8	22	SB	2	C		102		FDE
TEHR	09	1212	1245	1302D	N18	E70	.958		14.8	50D	SN	2	V		152		FDE
TEHR	09	1212	1214	1302D	N18	E70	.958		14.8	50D	SB	2	V		102		FDE
RAMY	09	1252E	1300	1634D	N19	E70	.959	15403	14.8	222D	2B	3	C		306		DE
RAMY	09	1252E	1424	1634D	N19	E70	.959	15403	14.8	222D	1B	3	C		115		DE
MCMA	09	1139	1142	1210	S21	W03	.255	15400	9.3	31	SN		C	1142	80	1.2	EH
RAMY	09	1349	1351	1356	S16	W75	.960		4.0	7	SN	3	C		9		
RAMY	09	1500	1510	1545	S19	E39	.642		12.6	45	SB	3	C		54		
MCMA	09	1544E		1646D	N18	E70	.958	15403	14.9	62D	1N		P	1645	100	2.7	EFT
PALE	09	1640E	1841U	2123	N17	E67	.941	15403	14.7	283D	2B	3	C		408		FDE
PALE	09	1737	1740	1816D	S19	E36	.604	15397	12.4	39D	1B	3	C		363		FDE
PALE	09	1801	1802	1805	S20	W 6	.253		9.3	4	SN	3	C		45		FDE
MCMA	09	1811E	1822	2200D	N20	E70	.960	15403	15.0	229D	2B		C	1822	280	.3	EFKLXY
PALE	09	2204	2226	2254	N18	E65	.931		14.8	50	SB	3	C		46		F
PALE	09	2301	0015	0017	N18	E64	.925		14.8	76	SB	3	C		65		F
PALE	10	0137	0143	0258	N18	E63	.919	15403	14.8	81	1B	3	C		188		FDE
MANI	10	0150E	0150U	0224D	N20	E65	.935	15403	15.0	34D	1B		P		180	3.6	
PALE	10	0219	0221	0242	N20	W35	.688	15409	7.5	23	1B	3	C		157		F
MANI	10	0225	0226	0235	N20	W34	.678		7.6	10	SN		V		150	16.5	
PALE	10	0312	0314	0414	N18	E62	.913	15403	14.8	62	1B	3	C		218		Z F
BUCA	10	0618E		0759	N19	E58	.888	15403	14.6	101D	2B		C	0626	537	10.7	U
ISTA	10	0630E		0710	N20	E65	.935	15403	15.1	40D	1N						
RAMY	10	1128	1143	1217	N19	E57	.880		14.8	49	SB	4	C		112		
RAMY	10	1241	1344	1434	N19	E56	.873	15403	14.7	113	1B	4	C		226		F
RAMY	10	1241	1252	1434	N19	E56	.873		14.7	113	SB	4	C		78		F
MCMA	10	1312		1415	N20	E60	.904	15403	15.1	63	1B		C	1320	100	2.2	E
MCMA	10	1436	1438	1441D	N14	E88	1.000	15410	17.2	5D	SF		C	1438			D
RAMY	10	1452	1503	1538	N19	E55	.865		14.7	46	SB	4	C		23		F
MCMA	10	1453		1515	N18	E56	.870	15403	14.8	22	SN		C	1500	25	.5	D
MCMA	10	1546	1558	1615	N15	E56	.862	15403	14.9	29	1N		C	1558	125	2.2	EK
RAMY	10	1550	1552	1647	N19	E55	.865		14.8	57	SN	3	C		45		FDE
RAMY	10	1655	1734	1737D	N19	E54	.857	15403	14.8	42D	2B	3	C		438		FDE
RAMY	10	1655	1707	1908D	N19	E54	.857		14.8	133D	SB	3	C		69		FDE
MCMA	10	1700	1735	1907D	N16	E55	.857	15403	14.8	127D	1B		C	1735	225	4.0	FHKVZ
PALE	10	1729E	1734	1806	N18	E55	.862	15403	14.9	37D	2B	3	C		445		UDE
PALE	10	1819	1825	2123	N17	E54	.851	15403	14.8	184	1N	3	C		164		UDE
PALE	10	1819	1920	2123	N17	E54	.851	15403	14.8	184	1B	3	C		338		UDE
RAMY	10	1702	1726	1810	S19	E25	.459		12.6	68	SB	3	C		23		
MCMA	10	1913E		2025D	N16	E55	.857	15403	14.9	72D	1B		C	1918	150	2.7	F
MCMA	10	2028	2040	2105D	N17	E52	.834	15403	14.8	37D	1B		C	2040	125	2.1	F
PALE	10	2125	2136	2222	N17	E53	.843		14.9	57	SN	3	C		123		F
PALE	10	2246	2248	2252D	N17	E52	.834	15403	14.8	6D	1B	3	C		175		FDE
MANI	10	2248	2250	2255	N17	E48	.798		14.6	7	SN		V		100	1.5	F
MANI	11	0054	0055	0105	N17	E47	.789		14.6	11	SN		V		120	1.8	
PALE	11	0304E	0340U	0352D	N17	E49	.808		14.8	48D	SB	3	C		110		F
PALE	11	0353	0400U	0418D	N17	E49	.808	15403	14.8	25D	2B	3	C		505		U F
MANI	11	0359E	0402	0406D	N18	E55	.862	15403	15.3	7D	1N		V		170	2.9	FE
BUCA	11	0705E		0728	N18	E45	.775		14.7	23D	SN		C	0705	85	1.3	
TEHR	11	0942E	0944U	0953	N20	E46	.793		14.9	11D	SB	2	C		127		
HERS	11	0943E	0943	1002	N18	E45	.775	15403	14.8	19D	1N		P	0949	187	2.7	E
MCMA	11	1037E	1056	1415	N18	E47	.793	15403	15.0	218D	2B		C	1056	700	10.9	HILRUX
TEHR	11	1037E	1040U	1046	N20	E46	.793		14.9	9D	SB	2	C		127		
HEND	11	1049	1057	1128D	N18	E43	.755	15403	14.7	39D	2N		P		800	11.5	
TEHR	11	1054E	1058U	1150	N20	E46	.793	15403	14.9	56D	1B	2	C		382		
HERS	11	1104E	1104	1253D	N18	E45	.775	15403	14.8	109D	1B		P	1106	230	3.3	E
MCMA	11	1135	1139	1147	S30	E33	.627	15401	14.0	12	SN		C	1139	60	.9	E

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		CORD.	TYPE	TIME UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
RAMY	11	1154E	1157U	1411	N19	E44	.770	15403	14.8	137D	1B	2	C		205		FDE
RAMY	11	1215	1301	1314D	N19	W55	.865		7.4	59D	SB	2	C		67		
RAMY	11	1219	1254	1314D	S19	W28	.499		9.4	55D	SN	2	C		25		
MCMA	11	1328	1336	1344	N15	E70	.954	15410	16.8	16	SF		C	1336	15	.5	D
MCMA	11	1415	1419	1445	S23	W26	.498	15400	9.6	30	SN		C	1419	40	.5	E
RAMY	11	1419	1419	1439	S19	W28	.499		9.5	20	SN	3	C		69		FDE
UPIC	11	1419E	1425U	1432	S22	W27	.504		9.6	13D	SF		P	1425	102	64.0	
RAMY	11	1424	1431	1454	N19	W55	.865		7.5	30	SN	3	C		31		
UPIC	11	1425	1428U	1441	N19	W57	.881	15409	7.3	16	1F		P	1428	143	32.0	F
UPIC	11	1425	1428	1445	S18	E13	.293		12.6	20	SN		P	1428	163	90.0	
RAMY	11	1427	1427	1430	S19	E13	.304		12.6	3	SB	3	C		27		
MCMA	11	1427	1431	1439	S20	E14	.327	15397	12.7	12	SF		C	1431	40	.5	E
TEHR	11	1425E	1425U	1431	S19	W28	.499		9.5	60	SN	2	C		64		
MCMA	11	1455E		1612D	N18	E45	.775	15403	15.0	77D	SB		C	1458	60	.9	EK
UPIC	11	1500	1506	1520	N19	E40	.731	15403	14.6	20	1N		P	1506	224	51.0	T
RAMY	11	1529	1613	1627	N19	E42	.751		14.8	58	SN	3	C		66		FDE
RAMY	11	1529	1533	1627	N19	E42	.751		14.8	58	SN	3	C		28		FDE
UPIC	11	1537	1551	1556	N18	E39	.716	15403	14.6	19	1N		P	1551	204	35.0	T
MCMA	11	1613	1619	1644D	N17	E40	.720	15403	14.7	31D	SB		C	1619	90	1.2	EH
UPIC	11	1615	1616	1626	N16	E38	.693		14.5	11	SN		P	1616	82	52.0	T
RAMY	11	1642	1650	1706	N18	E41	.736		14.8	24	SN	3	C		141		FDE
UPIC	11	1645	1653	1700D	N18	E39	.716	15403	14.6	15D	1N		P	1653	184	22.0	
PALE	11	1646E	1650U	1651D	N17	E42	.740		14.8	5D	SB	1	C		75		F
MCMA	11	1647E		1736D	N18	E42	.746	15403	14.8	49D	SB		C	1653	125	1.7	E
RAMY	11	1713	1715	1724	N18	E41	.736		14.8	11	SB	3	C		34		F
RAMY	11	1645	1649	1659	N19	W56	.873		7.5	14	SN	3	C		24		F
PALE	11	1907	2026U	2106	N17	E41	.730	15403	14.9	119	1B	3	C		212		U F
MCMA	11	2006	2007	2010	N16	E42	.735	15403	15.0	4	SF		C	2007	35	.5	E
MCMA	11	2017	2025	2111D	N18	E38	.705	15403	14.7	54D	SB		C	2025	110	1.5	E
PALE	11	2159	2232	2325	N20	E38	.718	15403	14.8	86	2B	3	C		878		U F
MANI	11	2242E	2242U	2255	N18	E38	.705	15403	14.8	13D	2F		V		400	5.4	
PALE	11	2226	2235	2236	N20	W60	.904		7.4	10	SN	3	C		60		FDE
PALE	11	2228	2228	2230D	N20	W38	.718	15392	9.1	2D	2B	3	C		761		UDE
PALE	12	0030E	0048U	0144	N18	E36	.685		14.7	74D	SB	3	C		148		FDE
PALE	12	0238	0259	0340	N18	E35	.675	15403	14.7	62	2B	3	C		510		U F
MANI	12	0249E	0251U	0251D	N18	E36	.685	15403	14.8	2D	1N		V		200	2.6	
TEHR	12	0253E	0255U	0300D	N18	E36	.685	15403	14.8	7D	1B	2	V		222		DE
HITK	12	0515E		0534D	N17	E33	.647	15403	14.7	19D	1N		P	0534	240	3.1	
TEHR	12	0529E	0533U	0545	N18	E36	.685		14.9	16D	SB	2	C		127		DE
BUCA	12	0810	0811	0835	N18	E31	.634		14.7	25	SN		C	0811	31	.4	E
UPIC	12	0815E		0825	N19	E30	.631		14.6	10D	SN		P	0815	102	61.0	
BUCA	12	0902	0911	0920	N17	E30	.615		14.6	18	SN		C	0911	95	1.2	
UPIC	12	0905	0908	0931	N19	E30	.631	15403	14.6	26	1N		P	0908	224	34.0	F
BUCA	12	0922	0923	0950	N18	E31	.634		14.7	28	SN		C	0923	47	.6	E
TEHR	12	1001	1005U	1026	N11	E28	.545		14.5	25	SF	2	C		64		F
BUCA	12	1013	1018	1041	N17	E30	.615		14.7	28	SB		C	1018	95	1.2	E
WEND	12	1017		1027	N18	E30	.623		14.7	10	SF		P				U
MCMA	12	1039E		1110	N18	E31	.634	15403	14.8	31D	SN		C	1045	125	1.5	E
MCMA	12	1050	1056	1059	N15	E56	.862	15410	16.7	9	SN		C	1056	40	.7	E
MCMA	12	1117	1118	1138	N20	E35	.689	15403	15.1	21	SN		C	1118	30	.4	D
MCMA	12	1141	1145	1148	N15	E56	.862	15410	16.7	7	SF		C	1145	25	.4	D
RAMY	12	1144	1145	1147	N16	E59	.888		16.9	3	SN	3	C		25		
RAMY	12	1145	1152	1217	N17	E30	.615		14.7	32	SN	3	C		57		
MCMA	12	1146	1155	1225	N20	E35	.689	15403	15.1	39	SN		C	1155	110	1.2	E
BUCA	12	1150	1153	1210	N17	E31	.626		14.8	20	SF		C	1153	40	.5	
RAMY	12	1148	1200	1222	N19	W67	.944		7.5	34	SB	3	C		96		
RAMY	12	1149	1152	1203	N16	E59	.888		16.9	14	SN	3	C		23		
MCMA	12	1213	1215	1219	S24	W41	.681	15400	9.4	6	SF		C	1215	35	.5	E
RAMY	12	1217	1218	1222	S21	W41	.671		9.4	5	SN	3	C		24		
RAMY	12	1223	1228	1230	N19	W67	.944		7.5	7	SB	3	C		43		
RAMY	12	1247	1248	1256	N19	W67	.944		7.5	9	SB	3	C		26		
MCMA	12	1300	1327	1410	N18	E29	.613	15403	14.7	70	SB		C	1327	90	1.1	EH
RAMY	12	1319	1327	1411	N17	E29	.604		14.7	52	SN	3	C		81		FDE
TEHR	12	1321	1328	1408	N18	E28	.603		14.7	47	SN	2	C		95		F
RAMY	12	1303	1309	1323	N19	W68	.949		7.4	20	SB	3	C		49		
RAMY	12	1324	1336	1444	N19	W68	.949		7.5	80	SN	3	C		48		
MCMA	12	1353	1356	1400	N18	W72	.967	15409	7.2	7	SB		C	1356	25	.8	D
HERS	12	1354E	1354	1403	N21	W65	.937	15409	7.7	9D	1N		P	1356	72	2.3	E
TEHR	12	1356	1359	1416	N20	W68	.951		7.5	20	SN	2	C		64		
MCMA	12	1435	1439	1500	N18	E29	.613	15403	14.8	25	SB		C	1439	40	.5	EL
RAMY	12	1435	1438	1445	N17	E28	.594		14.7	10	SB	3	C		28		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION — MIN.	IMP-ORT-ANCE	OBS.		MEASUREMENTS'			REMARKS
	DATE JUL	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP. DAY			CORD.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
MCMA	12	1523	1525	1530	S32	E19	.514	15401	14.1	7	SF		C	1525	40	.5	E
MCMA	12	1546	1547	1553	N18	W73	.971	15409	7.2	7	SN		C	1547	25	.8	EHLV
MCMA	12	1553	1609	1630D	N17	E28	.594	15403	14.8	37D	SB		C	1609	150	1.8	EKLJ
RAMY	12	1555E	1555U	1559	N16	E27	.574		14.7	4D	SN	3	C		22		F H
RAMY	12	1601	1606	1639	N16	E27	.574		14.7	38	SN	3	C		100		F H
RAMY	12	1644	1646	1650	N19	W69	.954		7.5	6	SN	2	C		21		F
RAMY	12	1658	1701	1713	N19	W70	.959		7.5	15	SN	2	C		25		F
MCMA	12	1713	1719	1727	N18	W74	.974	15409	7.2	14	SF		C	1719	30	1.2	D
MCMA	12	1700	1703	1711	S24	W44	.714	15400	9.4	11	SN		C	1703	50	.7	EV
RAMY	12	1702	1707	1711	S21	W42	.683		9.6	9	SN	2	C		66		F
RAMY	12	1756	1800	1811	N16	E26	.564		14.7	15	SN	3	C		53		F
PALE	12	1759	1802	1850	N17	E29	.604		14.9	51	SN	3	V		88		FDE
MCMA	12	1757	1802	1825	N12	E58	.871	15410	17.1	28	SF		C	1802	25	.5	D
PALE	12	2049	2058	2120	N17	E27	.583	15403	14.9	31	1B	3	C		288		UDE
MCMA	12	2050	2055	2130	N17	E24	.552	15403	14.7	40	1B		C	2055	175	2.1	EX
PALE	12	2052	2052	2107	S20	W45	.714		9.5	15	SN	3	C		47		FDE
MCMA	12	2147	2150	2215	N14	E28	.568	15403	15.0	28	SN		C	2150	100	1.2	E
PALE	12	2148	2152	2207	N17	E27	.583		14.9	19	SB	3	C		86		FDE
PALE	12	2328	2330	2334	N17	E26	.573		14.9	6	SB	3	C		175		FDE
MANI	12	2330E	2330U	2335	N17	E24	.552		14.8	5D	SN		V		120	1.3	F
MANI	13	0025	0027	0032	N16	W78	.986		7.2	7	SF		P		20	.5	
TEHR	13	1018	1020	1051	N14	E22	.502		15.1	33	SN	2	C		64		
TEHR	13	1022	1025	1036	N18	E50	.821		17.2	14	SN	2	C		95		
PALE	13	2004E	2005U	2044D	N17	E14	.461		14.9	40D	SN	3	C		51		F
MANI	14	0527	0529	0540	N15	E10	.406		15.0	13	SN		P		50	.5	F
TEHR	14	0858	0900	0905	N18	E 4	.424		14.7	7	SN	3	C		32		
TEHR	14	0915	0916	0924	S22	W63	.887		9.7	9	SN	3	C		64		
MCMA	14	1100	1110	1225D	N14	E07	.373	15403	15.0	85D	SB		C	1110	100	1.1	E
TEHR	14	1103	1105	1124	N16	E 3	.390		14.7	21	SN	3	C		95		F
UPIC	14	1112E		1125D	N14	E06	.368	15403	14.9	13D	1N		P	1112	245	25.0	
MCMA	14	1123	1127	1140D	S25	E55	.824	15413	18.6	17D	SF		C	1127	20	.4	D
MCMA	14	1133	1138	1156	N15	E72	.964	15415	19.9	23	SB		C	1138	30	1.0	E
TEHR	14	1134E	1136	1142	N17	E68	.947		19.6	8D	SN	2	C		64		
MCMA	14	1143	1203	1240D	S25	E55	.824	15413	18.6	57D	SN		C	1203	20	.4	DH
MCMA	14	1342	1345	1400	S25	E54	.815	15413	18.6	18	SN		C	1345	20	.4	DH
RAMY	14	1404	1408	1417	N18	E 3	.422		14.8	13	SN	3	C		26		
MCMA	14	1411		1447	S25	E54	.815	15413	18.6	36	SB		C	1439	20	.4	DHK
RAMY	14	1436E	1436	1445	S23	E52	.793		18.5	9D	SN	3	C		24		H
TEHR	14	1437E	1440	1447	S23	E48	.753		18.2	10D	SF	1	C		32		
RAMY	14	1557	1600	1702	N15	E 2	.373		14.8	65	SN	3	C		89		
MCMA	14	1625E	1631	1718D	N14	E04	.361	15403	15.0	53D	1N		C	1631	200	2.0	E
RAMY	14	1604	1606	1612	S23	E52	.793		18.6	8	SN	3	C		26		
MCMA	14	1604	1606	1612	S25	E53	.806	15413	18.6	8	SN		C	1606	25	.5	D
MCMA	14	1650	1657	1702D	S25	E53	.806	15413	18.7	12D	SN		C	1657	25	.5	D
RAMY	14	1733	1733	1737	N18	E 1	.419		14.8	4	SN	3	C		73		
PALE	14	1733	1733	1738	N17	E 3	.406		15.0	5	SN	3	C		133		F
MCMA	14	1733	1734	1737	N15	W03	.374	15403	14.5	4	SB		C	1734	40	.4	D
MCMA	14	1800	1806	1815	S25	E51	.788	15413	18.6	15	SN		C	1806	40	.7	DH
RAMY	14	1806	1807	1811	S23	E51	.784		18.6	5	SF	3	C		26		H
MITK	15	0036E	0101	0127D	N14	W01	.356	15403	15.0	51D	1B		C	0101	280	2.9	
PALE	15	0046E	0135U	0140	N17	W 3	.407		14.8	54D	SN	3	C		29		FDE
MANI	15	0053E	0055	0115	N22	E02	.483	15403	15.2	22D	1B		V		200	2.1	ZE
PALE	15	0405E	0405U	0418	N17	W 4	.409		14.9	13D	SB	3	C		26		FDE
TEHR	15	0405	0409	0423	N18	W 5	.427		14.8	18	SB	2	C		64		
PALE	15	0407	0413	0418	S23	E44	.710		18.5	11	SN	3	C		133		
TEHR	15	0536E	0537	0551	S24	E41	.680		18.3	15D	SN	3	C		95		F
TEHR	15	0725	0729	0737	N28	W 2	.572		15.2	12	SF	3	C		95		F
BUCA	15	0730E		0742	N28	W02	.572		15.2	12D	SF		C	0731	15	.2	E
MCMA	15	1055E		1205D	N17	E23	.544	15410	17.2	70D	SN		P	1120	120	1.3	E
MCMA	15	1055E		1115	N15	W10	.406	15403	14.7	20D	SF		P	1056	40	.4	E
RAMY	15	1318	1322	1346	N19	E52	.842		19.5	28	SN	4	C		33		
RAMY	15	1344	1345	1355	N18	W10	.449		14.8	11	SN	4	C		69		H
MCMA	15	1344	1345	1350D	N14	W07	.374	15403	15.0	6D	SN		C	1345	50	.5	E
MCMA	15	1424	1425	1500	N18	W12	.462	15403	14.7	36	1B		C	1425	200	2.1	E
RAMY	15	1425	1425	1428D	N18	W10	.449	15403	14.9	3D	1B	4	V		310		F
TEHR	15	1425	1431U	1443	N19	W10	.464	15403	14.9	18	1B	1	C		300		F
PALE	16	0433	0434	0435D	N20	E41	.748		19.3	2D	SN	3	C		56		FDE
MCMA	16	1221	1230	1246	N28	W19	.635	15403	15.1	25	SN		C	1230	60	.7	E

Hα SOLAR FLARES

JULY 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE JUL	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		CORD.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
RAMY	16	1254	1256	1314	N18	W22	.545		14.9	20	SB	3	C		98		F
RAMY	16	1602	1602	1609	N18	W24	.564		14.9	7	SN	3	C		21		
RAMY	16	1613	1613	1634	N18	W24	.564		14.9	21	SB	3	C		49		
RAMY	16	1647	1647	1650	N18	W24	.564		14.9	3	SN	3	C		30		
RAMY	16	1947	1948	1953	N18	W26	.584		14.9	6	SB	3	C		90		
PALE	16	1948	1948	1950	N17	W25	.564		15.0	2	SB	3	C		68		FDE
MITK	17	0018E	0023	00360	S26	E20	.454	15403	18.5	180	1F		C	0023	230	2.9	E
PALE	17	0022	0022	0033	S23	E20	.424		18.5	11	SN	3	C		29		FDE
PALE	17	0156	0157	0218	N17	W29	.606		14.9	22	SB	3	C		66		FDE
MITK	17	0157E		02300	N14	W30	.593		14.8	330	SN		C	0157			E
MITK	17	0246E	0253	03090	N14	W30	.593		14.9	230	SN		C	0253			EH
PALE	17	0246	0249	0307	N17	W29	.606		14.9	21	SN	3	C		97		FDE
TEHR	17	0939	0943	0957	S18	W63	.885	15397	12.7	18	1B	2	C		127		
WEND	17	1030		1048	N14	W30	.593		15.2	18	SN						
TEHR	17	1038E	1041	10430	N18	W34	.666	15426	14.9	50	1B	2	V		222		
MCMA	17	1040E		1055	N14	W34	.639	15403	14.9	150	SN		C	1041	60	.7	E
MCMA	17	1120	1126	1245	N21	W30	.650	15403	15.2	85	SN		C	1126	30	.4	DK
MCMA	17	1256	1258	1320	N14	W35	.650	15403	14.9	24	SF		C	1258	40	.5	E
RAMY	17	1301E	1301U	1310	N16	W 7	.406		17.0	90	SN	3	C		23		
MCMA	17	1350	1356	14200	N14	W37	.672	15403	14.8	380	SN		C	1356	75	1.0	EL
RAMY	17	1352	1410	1450	N17	W36	.680		14.9	58	SB	3	C		47		FDE
RAMY	17	1352	1427	1450	N17	W36	.680		14.9	58	SN	3	C		106		FDE
MCMA	17	1425	1428	1500	N14	W37	.672	15403	14.8	35	SB		C	1428	80	1.1	EL
WEND	17	1426		1448	N14	W33	.627		15.1	22	SN		V				
TEHR	17	1435	1438U	1445	N17	W35	.670		15.0	10	SB	2	C		63		
RAMY	17	1558	1600	1608	N19	E25	.584		19.5	10	SN	3	C		20		
RAMY	17	1623	1628	1645	N19	E25	.584		19.6	22	SF	3	C		167		F
RAMY	17	1623	1625	1645	N19	E25	.584		19.6	22	SB	3	C		100		F
MCMA	17	1623	1627	1640	N16	E27	.576	15415	19.7	17	SN		C	1627	50	.6	EH
RAMY	17	1800	1802	1814	N18	E23	.555		19.5	14	SB	3	C		66		F
MCMA	17	1835	1840	1855	N17	W10	.436	15410	17.0	20	SN		C	1840	40	.4	E
RAMY	17	1839	1840	1851	N14	W11	.400		17.0	12	SN	3	C		88		F
PALE	17	1839	1840	1849	N15	W12	.422		16.9	10	SB	3	C		75		FDE
RAMY	17	1949	1951	2011	N14	W12	.408		16.9	22	SB	3	C		69		F
MCMA	17	1950	1953	2005	N17	W10	.436	15410	17.1	15	SN		C	1953	50	.5	E
PALE	17	1951	1951	1957	N15	W13	.429		16.9	6	SN	3	C		23		DE
RAMY	17	2028	2035	20560	N17	W40	.722		14.9	280	SB	3	C		45		F
MCMA	17	2028	2035	2110	N21	W31	.660	15403	15.5	42	SN		C	2035	40	.5	E
PALE	17	2035	2037	2057	N17	W39	.712		14.9	22	SB	3	C		23		DE
MCMA	17	2115	2123	2150	N14	W40	.705	15403	14.9	35	SB		C	2123	50	.7	E
PALE	17	2120	2120	2130	N17	W39	.712		15.0	10	SN	3	C		32		DE
PALE	17	2133	2134	2223	N17	W40	.722		14.9	50	SN	3	C		118		FDE
MCMA	17	2133	2135	22060	N20	W38	.720	15403	15.0	330	SB		C	2135	75	1.0	E
MCMA	17	2159		22060	N17	W12	.449	15410	17.0	70	SN		C	2206	80	.9	E
PALE	17	2201	2202	2214	N15	W14	.437		16.9	13	SB	3	C		26		FDE
PALE	18	0018	0020	0111	N17	W42	.742		14.9	53	SN	3	C		137		FDE
BUCA	18	0800	0803	0812	N14	W44	.748		15.0	12	SF		C	0803	15	.2	E
BUCA	18	0820		0832	N19	W44	.772		15.0	12	SF		C	0823	15	.2	
BUCA	18	0845		0923	N19	W44	.772		15.1	38	SN		C	0900	63	.9	
TEHR	18	0903E	0906	0919	N18	W44	.767	15403	15.1	160	1B	2	C		222		U
BUCA	18	0927		0957	N15	W46	.773		14.9	30	SN		C	0929	47	.7	E
MCMA	18	1306		13090	N20	W46	.795	15403	15.1	30	SB		C	1308	50	.8	E
RAMY	18	1311E	1313	1324	N17	W49	.809		14.9	130	SB	3	C		33		FDE
TEHR	18	1314E	1316	1324	N18	W46	.786		15.1	100	SB	2	C		95		U
RAMY	18	1421	1428	1451	N14	W22	.504	15410	16.9	30	1B	3	C		241		FDE
TEHR	18	1430E	1432	1445	N15	W22	.514	15410	17.0	150	1B	2	C		254		F
MCMA	18	1432E		1455	N19	W19	.530	15410	17.2	230	SN		C	1432	100	1.1	E
RAMY	18	1534	1534	1543	N19	E12	.477		19.5	9	SN	3	C		55		FDE
RAMY	18	1535	1538	15520	N17	W51	.827		14.8	170	SB	3	C		34		FDE
RAMY	18	1719	1724	17370	N17	W51	.827		14.9	180	SN	3	C		95		Z F
PALE	18	1722	1726	1851	N17	W51	.827		14.9	89	SN	3	C		118		FDE
PALE	18	1927	1959	20100	N17	W53	.844	15403	14.8	430	2B	3	C		520		
RAMY	18	1948E	1957	20000	N17	W52	.836	15403	14.9	120	2B	3	V		388		FDE
PALE	19	0324	0326	0332	N20	E 2	.455		19.3	8	SB	3	C		110		FDE
TEHR	19	0325E	0326	0330	N19	W 1	.438		19.1	50	SN	3	C		95		U
MITK	19	0513E	0515	05260	N18	W63	.920	15403	14.5	130	1N		C	0515	100	2.1	E
TEHR	19	0515E	0518	0535	N17	W56	.869		15.0	200	SB	2	C		95		DE
BUCA	19	0945		1005	N10	W30	.564		17.2	20	SF		C	0946	71	.8	
RAMY	19	1221	1222	1236	N18	W 1	.423		19.4	15	SN	3	C		20		F

Hα SOLAR FLARES

JULY 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE JUL	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COORD.	TYPE	TIME UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
RAMY	19	1321	1322	1405	N15	W63	.915		14.8	44	SN	3	C		61		F
TEHR	19	1323E	1327	1342D	N18	W60	.901		15.1	190	SB	2	C		127		DE
RAMY	19	1337	1340	1405	N18	W 5	.430		19.2	28	SN	3	C		55		F
RAMY	19	1428	1429	1436	N18	W 5	.430		19.2	8	SN	3	C		45		F
RAMY	19	1540	1541	1547	N18	W 6	.433		19.2	7	SN	3	C		36		F
MITK	20	0006E	0016	0057D	N17	W71	.962	15403	14.7	51D	1N		C	0016	190		EH
PALE	20	0009	0012	0042	N17	W68	.947		14.9	33	SN	3	C		38		FDE
HANI	20	0011E	0014	0019D	N17	W70	.957		14.8	8D	SN		V		90	1.9	F
TEHR	20	0329E	0333	0344	S16	W 4	.170	15416	19.8	15D	1B	2	C		222		F
MONT	20	0808	0812	0814	N17	E67	.942		25.4	6	SF		C	0812	70		D
MONT	20	0912	0924	0935	S20	E90	.999		27.1	23	SF		C	0924	50		E
RAMY	20	1200	1221	1312	N18	W75	.978		14.9	72	SB	3	C		22		
MCMA	20	1215E	1221	1315	N22	W80	.993	15403	14.5	60D	SN		C	1221			D
MCMA	20	1304	1308	1318	N18	W46	.786	15410	17.1	14	SB		C	1308	70	1.0	E
RAMY	20	1306	1307	1316	N16	W47	.787		17.0	10	SN	3	C		67		F
TEHR	20	1308E	1311	1314	N18	W47	.795		17.0	6D	SB	2	C		64		F
TEHR	20	1308E	1311	1315	N21	W73	.974		15.1	7D	SB	2	C		64		
RAMY	20	1321	1324	1341	N18	W75	.978		14.9	28	SN	3	C		49		F
MCMA	20	1321	1324	1345	N22	W80	.993	15403	14.6	24	SB		C	1324			D
TEHR	20	1322	1324	1335	N21	W73	.974		15.1	13	SN	2	C		64		
MCMA	20	1433	1435	1441	N22	W81	.995	15403	14.5	8	SF		C	1435			D
MCMA	20	1510E	1514	1535D	N21	W83	.998	15403	14.4	25D	SN		C	1514			E
RAMY	20	1606	1610	1617	N18	W76	.982		15.0	11	SB	3	C		42		
MCMA	20	1607E	1608	1616	N22	W83	.998	15403	14.4	9D	SB		C	1608			D
MCMA	20	1705E	1712	1718D	N18	W48	.805	15410	17.1	13D	SF		C	1712	25	.4	D
TEHR	21	0451E	0453	0510	N17	W83	.997		15.0	19D	SN	2	C		64		DE
RAMY	21	1123	1124	1128	N27	W88	1.000		14.9	5	SN	3	C		20		
RAMY	21	1200	1203	1248	N14	W61	.899		16.9	48	SN	3	C		28		
RAMY	21	1237	1237	1249	N17	W89	1.000		14.9	12	SN	3	C		7		
RAMY	21	1307	1307	1354	N14	W61	.899		17.0	47	SN	3	C		22		
RAMY	21	1507	1507	1513	N14	W62	.906		17.0	6	SN	3	C		29		
RAMY	21	1717	1717	1720	N11	W64	.915		16.9	3	SN	3	C		16		
RAMY	21	1843	1845	1856	N11	W65	.922		16.9	13	SB	3	C		33		
RAMY	21	1857	1900	1926D	N17	W90	1.001	15403	15.0	29D	1B	3	C		0		
MCMA	22	1742	1747	1758	S15	W08	.193	15423	22.1	16	SN		C	1747	45	.5	E
MCMA	22	1941E		1951D	N27	E33	.728	15428	25.3	10D	SN		C	1942	30	.4	E
MONT	23	0735	0744	0829	N26	E29	.688	15428	25.5	54	1N		C	0744	500		
RAMY	23	1448	1454	1525	N17	W61	.906		19.0	37	SB	3	C		55		F S
RAMY	25	1359	1400	1405	S25	W71	.938		20.3	6	SF	3	C		23		
ISTA	26	0813E		0821D	N10	W15	.387		25.2	8D	SF						
RAMY	26	1942E	1944	1949	N39	E90	1.003		5.6	7D	SF	3	C		0		
MONT	27	0939	0941	0946	N15	E70	.955		4.7	7	SF		C	0941	50		
RAMY	27	1428	1432	1456	N37	E83	1.000		5.8	28	SF	3	C		0		
RAMY	27	1543	1545	1552	N37	E82	.999		5.8	9	SN	3	C		0		
MCMA	27	1820E		1847	N36	E86	1.000	15441	6.2	27D	SF		C	1820			D
MONT	28	0838	0841	0859	N15	E58	.880		4.7	21	SN		C	0841	60		E
MCMA	28	1411	1414	1420	N27	W27	.683	15428	26.6	9	SF		C	1414	25	.3	DH
MITK	29	0135E	0141	0158D	N27	W32	.721		26.7	23D	SF		C	0141			
TEHR	29	1045E	1049	1102	N19	E65	.935		6.3	17D	SB	2	C		127		DE
WEND	29	1047E		1108D	N22	E71	.968	15443	6.8	21D	2N		P		300		F
RAMY	29	1832	1836	1842	N23	E68	.956		6.9	10	SN	3	C		67		F
MONT	30	0910	0923	0944	N23	W35	.715		27.8	34	SN		C	0923	180		
RAMY	30	1159	1202	1211	N37	E46	.880		5.9	12	SN	2	C		43		
RAMY	30	1559	1559	1605	S20	E52	.787		6.6	6	SN	3	C		19		
RAMY	30	1633	1634	1657	S21	E50	.768		6.4	24	SN	3	C		23		F
MCMA	31	1125	1126	1148	N17	E32	.641	15443	5.9	23	SF		C	1126	40	.5	E

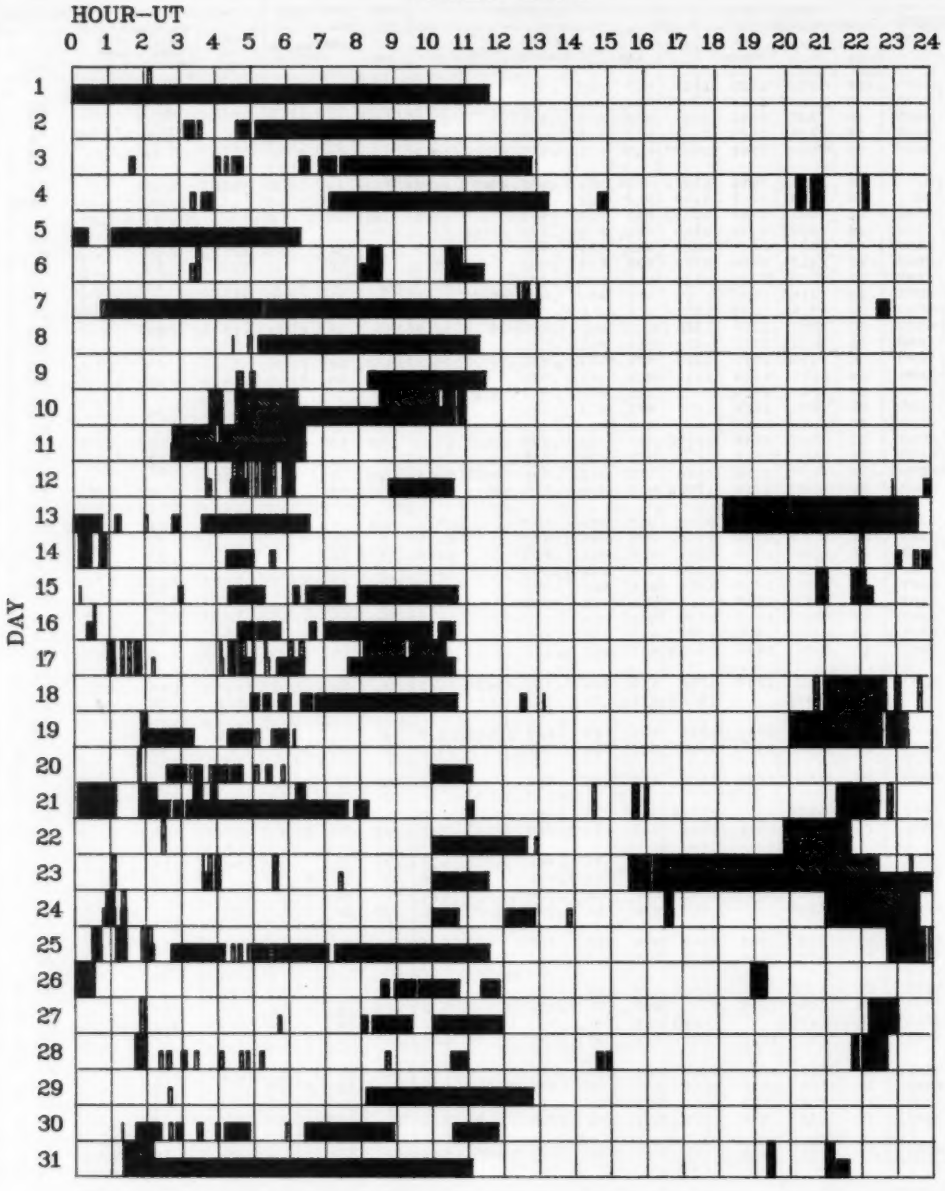
"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

JULY 1978



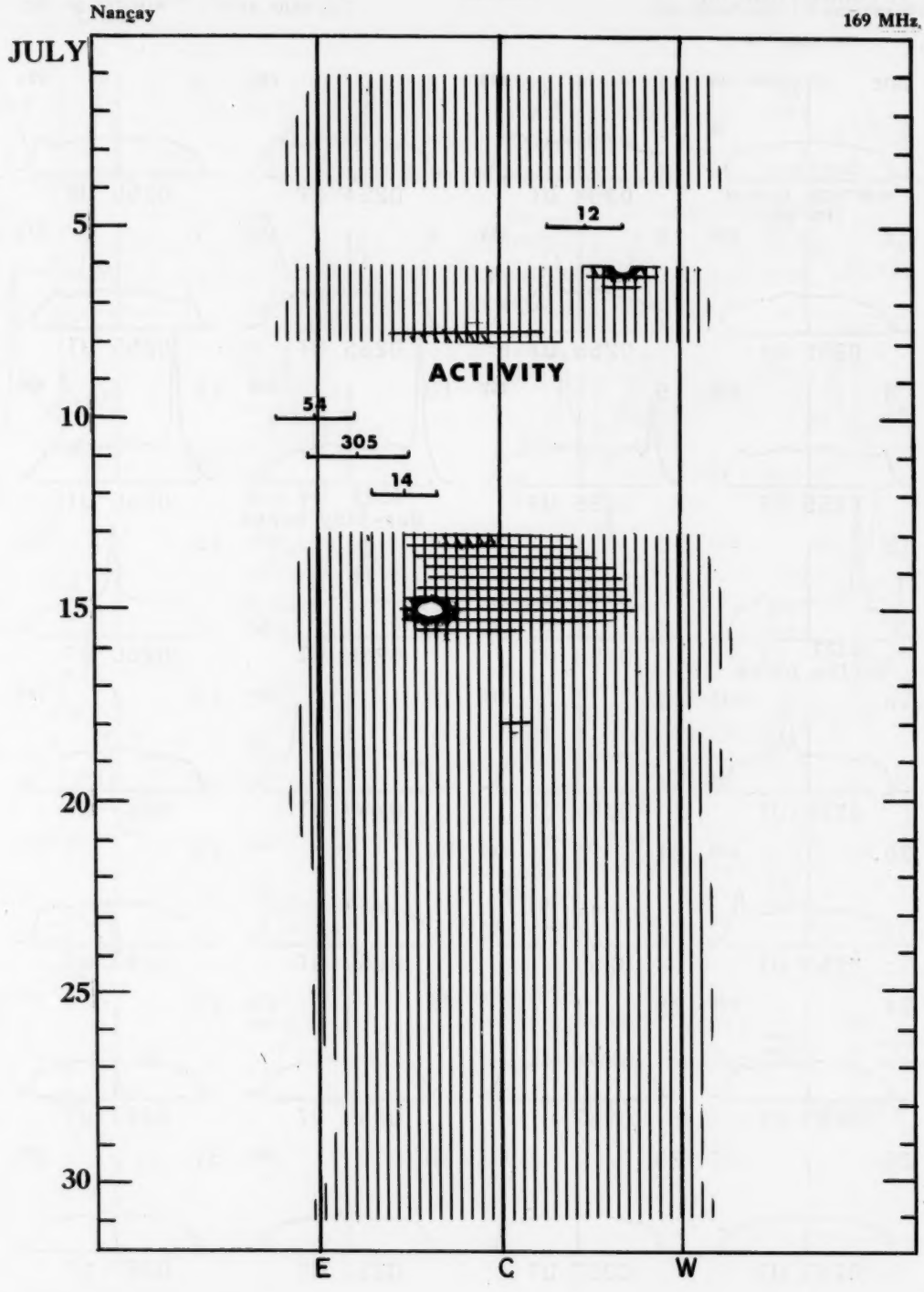
Observatories included in total patrol:

Bucharest	Istanboul	McMath-Hulbert	Palehua	Upice
Herstmonceux	Kandilli	Mitaka	Ramey	Wendelstein
Holloman	Manila	Monte Mario	Tehran	

Times of no flare patrol are shown by the shaded area for each day, divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

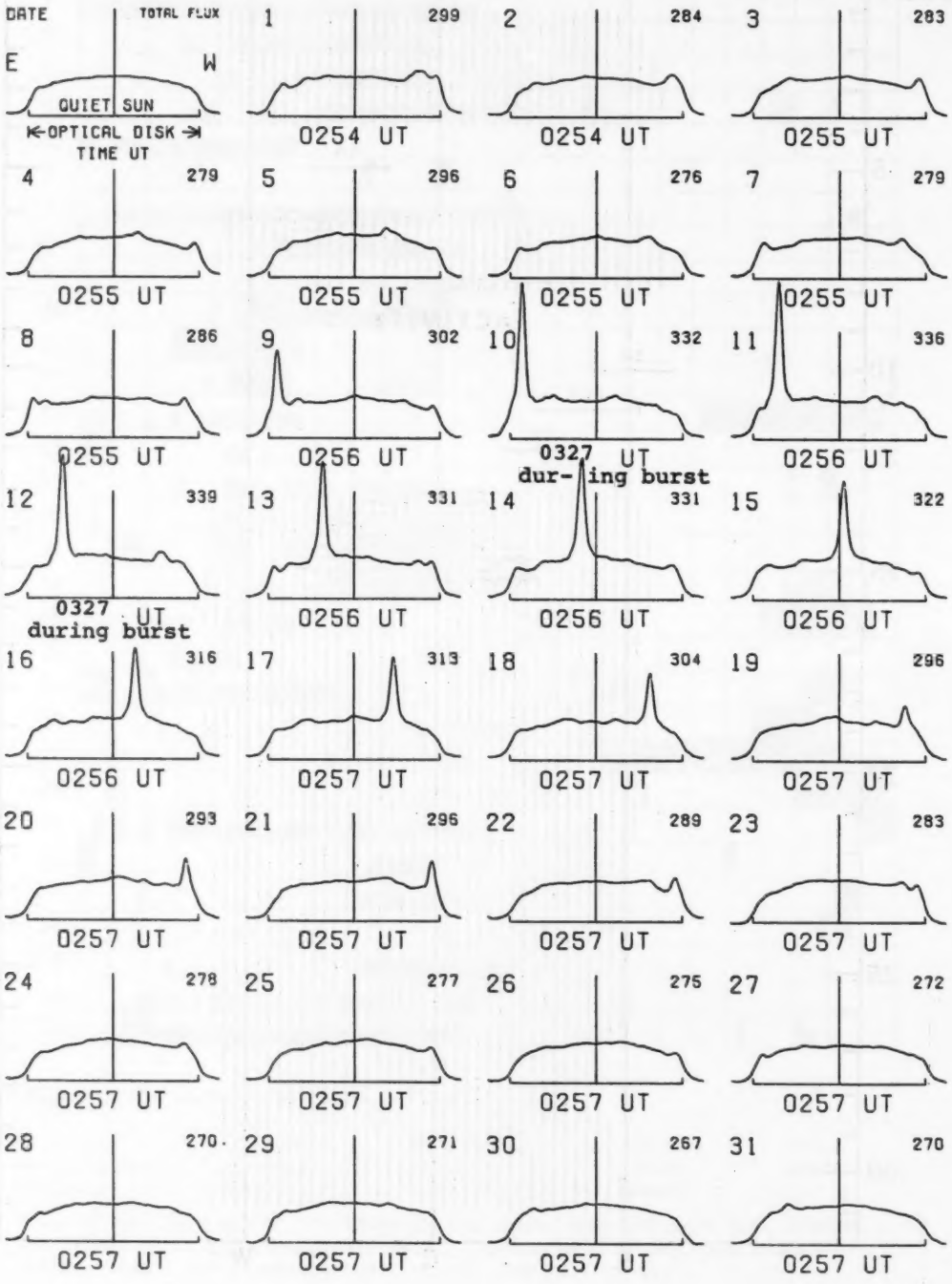
JULY 1978



EAST-WEST SOLAR SCANS
JULY 1978

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

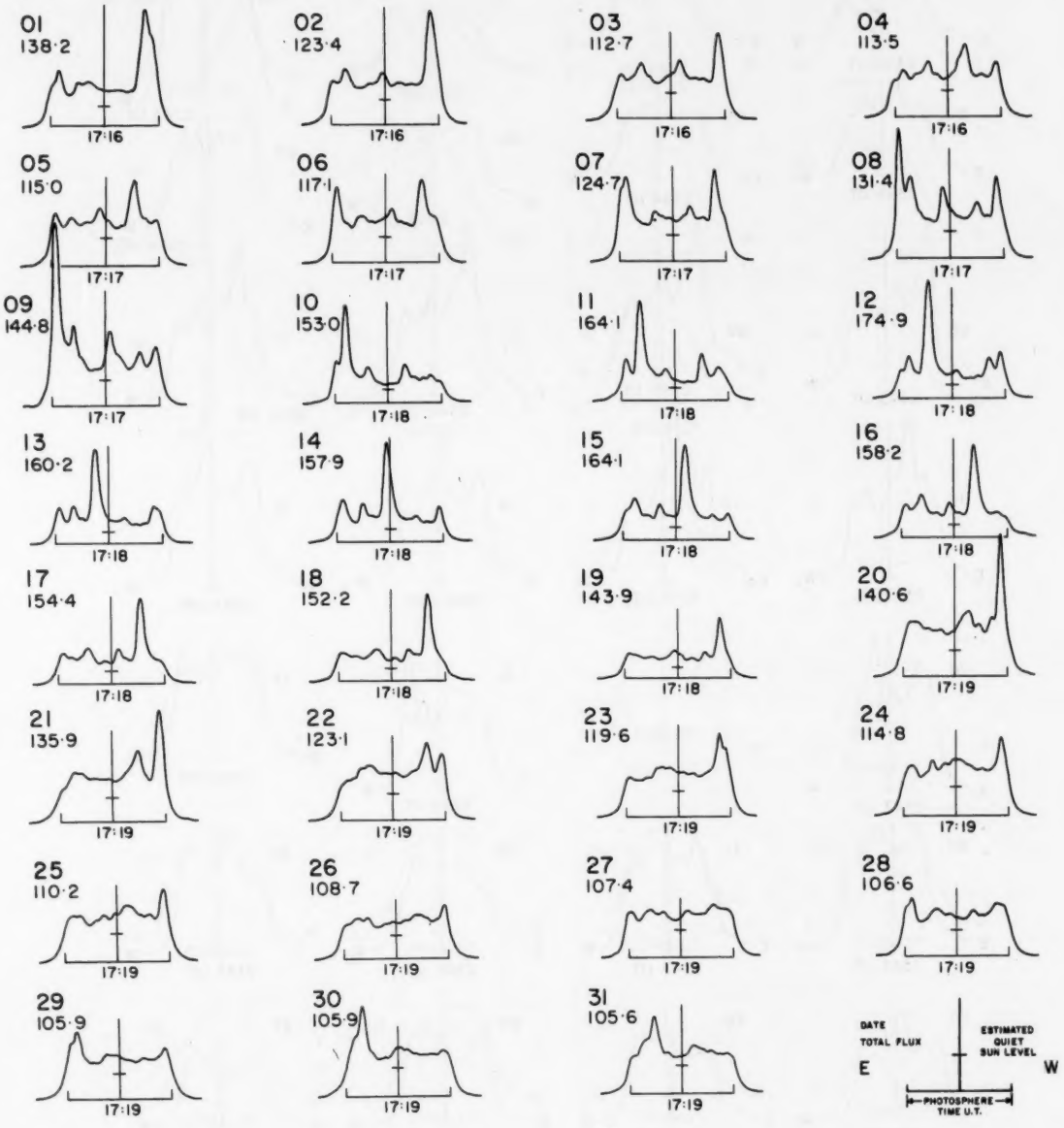


EAST-WEST SOLAR SCANS

JULY 1978

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

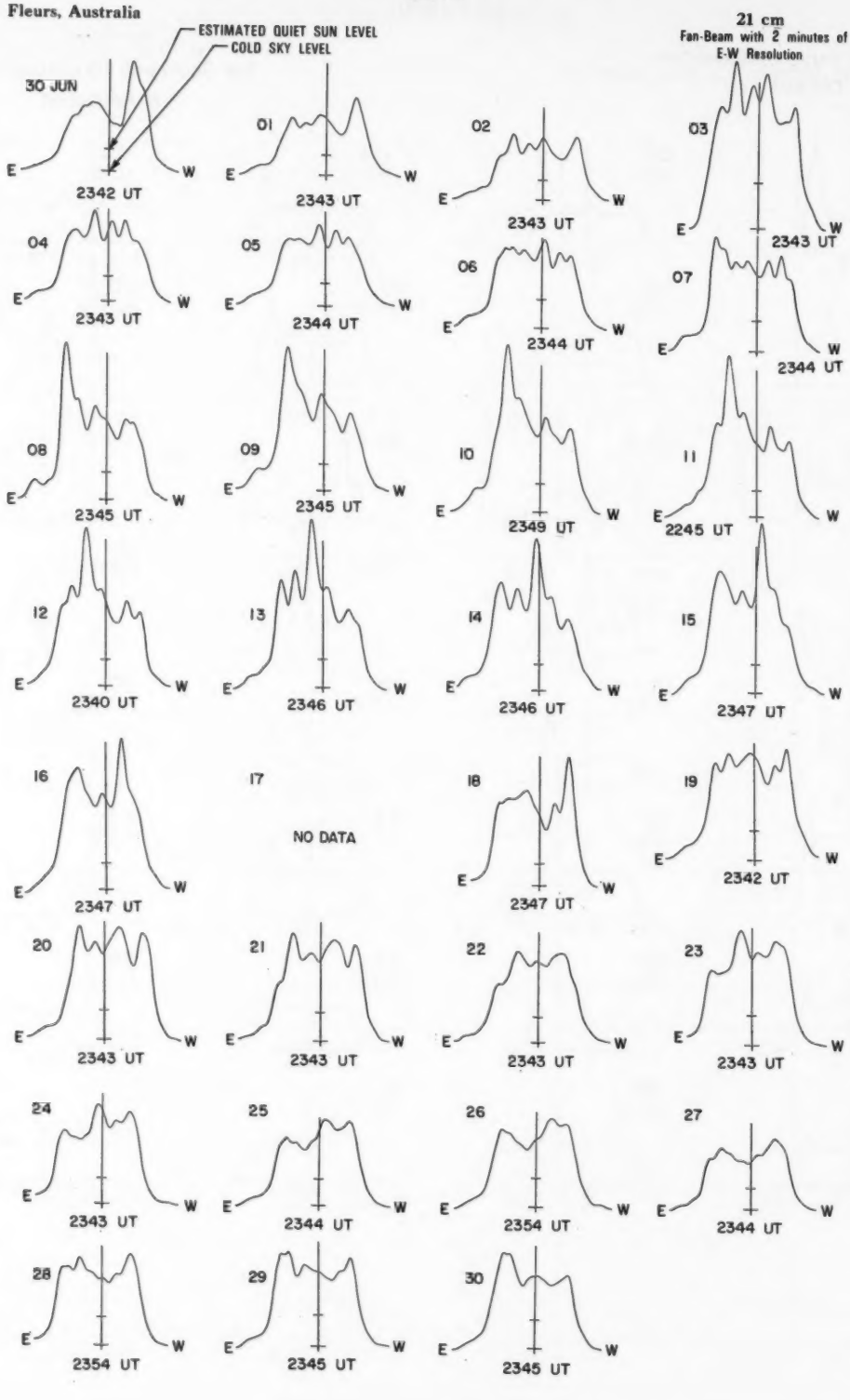


EAST-WEST SOLAR SCANS

JULY 1978

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



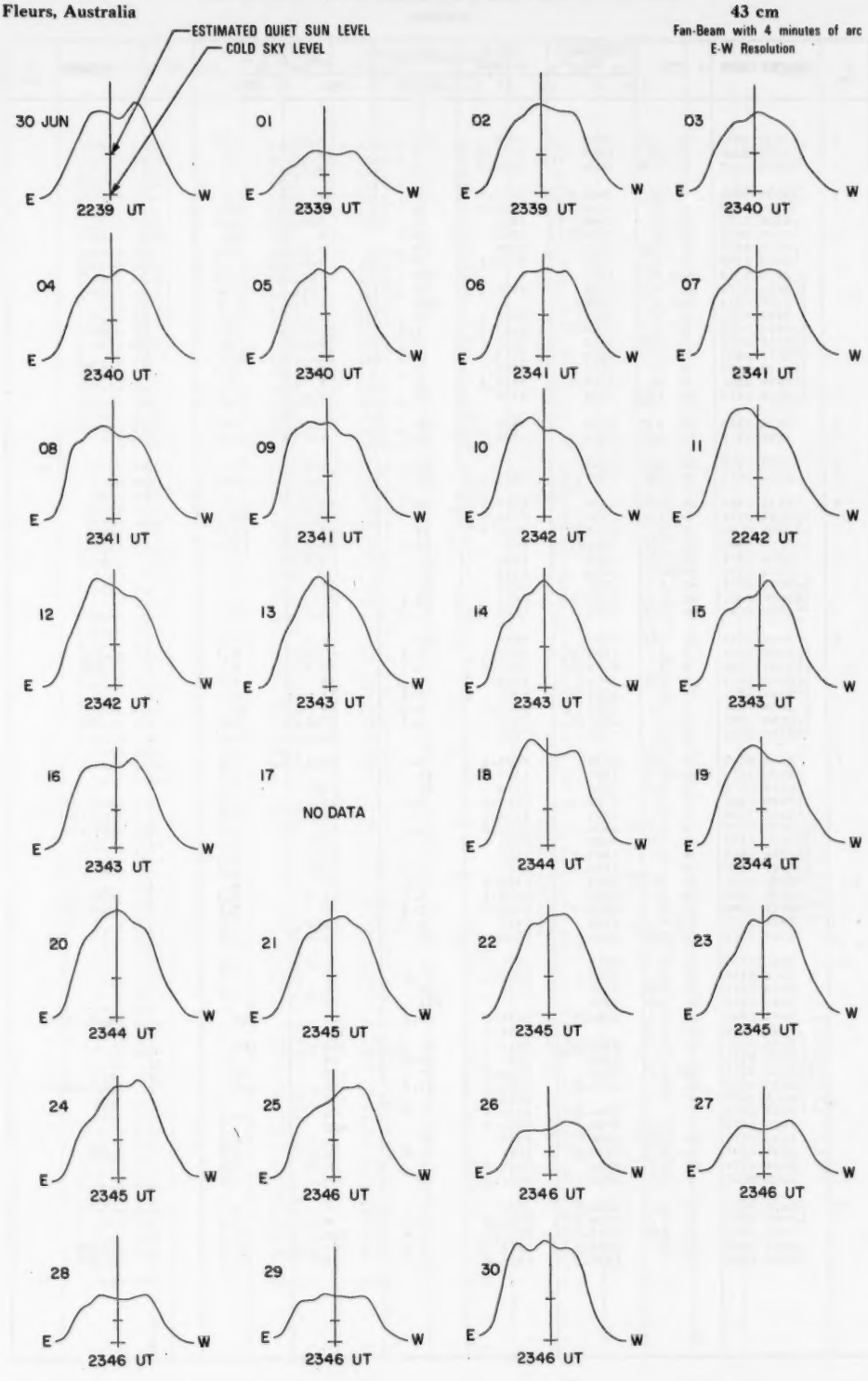
EAST-WEST SOLAR SCANS

JULY 1978

Fleurs, Australia

43 cm

Fan-Beam with 4 minutes of arc E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JULY 1978

JUL 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
1	2800	OTTA	21 GRF	1410	1520	230	9.8	4.9		
	2695	BOUL	4 SF	1413	1417.5	6	22	7		
	2695	PENT	4 S/F	1414	1416.5	9	23.8	7		
2	2695	BCUL	4 SF	1402.5	1406.5	10	37	12		
	2695	SGMR	3 S	1404	1405.8	6	37.8	15.1		
	2800	OTTA	1 S	1458	1501	5	2.8	1.4		
	2695	BCUL	45 C	1458.5	1502	4.5	5	2		
	2800	OTTA	21 GRF	1510	1525	50	2.2	1.1		
	2800	OTTA	1 S	1550	1550.2	2	1.4	.7		
	2800	OTTA	27A RF	1720		310	2.2	1.9		
	2800	OTTA	24 R	1720	1830	70	2.2	1.1		
	2800	OTTA	24P R	1830		215	2.2			
	2800	OTTA	1 S	2032	2033	3	2	1		
	8800	SGMR	3 S	2148.9	2149.4	1.9	23.8	7.1		CONT
	2800	OTTA	4 S/F	2149	2149.1	3	18.4	5		
	8800	MANI	8 S	2149	2149.3	.6	33.4	11		
	2695	SGMR	3 S	2149	2149.4	2	13.8	4.1		CONT
	2695	BOUL	4 SF	2149.5	2150.5	2	8	3		
	2800	OTTA	26 FAL	2205	2230	25	-2.2	-1.1		
3	2800	OTTA	20 GRF	1255	1330	145	4	2.1		
	2800	OTTA	20 GRF	1820	1830	45	1.6	.8		
4	2800	OTTA	20 GRF	1530		60	1.4	1		
	2800	OTTA	20 GRF	1905	2000	115	1.8	1.2		
5	2800	OTTA	28 PRE	1134	1147.5	20	13.2			
	2800	OTTA	4 S/F	1154	1206.5	36	96	36.8		
	2695	SGMR	3 S	1156	1206.8	39	105	41.9		CONT
	8800	SGMR	20 GRF	1202.5	1207	32.5	26.4	7.9		CONT
	2800	OTTA	29 PBI	1230	1230	170	9.6	3		
	2800	OTTA	24OAR	1610	1900	170	6			
	2800	OTTA	40 F	1745	1800	45	26			
	2695	BCUL	41 F	1748.5	1801	43.5	26	9		
	2695	SGMR	4 S/F	1754.7	1803.3	34.6	33.3	10		2,CONT
6	2800	OTTA	21 GRF	1500	1600	150	4.2	2.1		
	8800	SGMR	3 S	1510.2	1511.8	4.3	19.1	5.7		5,SWF
	2695	SGMR	3 S	1510.9	1512.2	4.1	13.4	4		5,SWF
	2800	OTTA	4 S/F	1511	1512	4	13	3.7		
	2695	BOUL	45 C	1511.5	1513	6.5	11	4		
	2695	BCUL	3 S	1520 E	1520.5	4.5D	45	15		
	2695	SGMR	3 S	1527.4	1530	6.9	67.9	20.4		4,SWF
	2800	OTTA	3 S	1528	1530	7	51	15.2		
7	2695	MANI	4 S/F	0535	0537.1	4.5	25.1	8.4		
	2800	OTTA	24OAR	1205	1223	18	2	1		
	2800	OTTA	4 S/F	1210	1213	12	14.2	5.6		
	2695	SGMR	3 S	1210.4	1213.4	5.2	16	6.4		CONT,SWF
	8800	SGMR	3 S	1211	1213.2	4	48.5	19.4		CONT,SWF
	2695	SGMR	3 S	1438.4	1441.2	6.8	15	4.5		CONT,SWF
	2800	OTTA	21 GRF	1439	1530	76	2.4	1.4		
	2800	OTTA	3 S	1439.5	1441	4	11.8	8.4		
	8800	SGMR	3 S	1439.7	1441	4.2	16.4	4.9		CONT,SWF
	2695	BCUL	4 SF	1440	1442.5	4.5	12	4		
	2695	SGMR	3 S	1641	1643.1	3.1	10.5	5.3		CONT,SWF
	8800	SGMR	1 S	1641.3	1642.8	2.9	6	3.1		CONT,SWF
	2800	OTTA	240 R	1758	1800	2	1.2	.6		
	2800	OTTA	20 GRF	1810	1900	160	4.8	2.4		
8	2800	OTTA	1 S	1050	1051	5	6.8	2.4		
	2800	OTTA	8 S	1241	1241.1	.5	2	1		
	2800	OTTA	20 GRF	1500	1600	100	2.6	1.3		
	2800	OTTA	21 GRF	1705		530 D	16			
	2695	SGMR	45 C	1942.3	2000.5	61.7	105	152		3G,5,CONT,
	2695	SGMR	45 C		2016.4		381			SWF
	2695	BCUL	45 C	1942.5E	2018	87 D	356	119		
	2800	OTTA		1943	1951	14.5	79			
	2800	OTTA	46F C	1943	2016.5	72	420	73		
	8800	SGMR	45 C	1946.5	1950.9	53.2	298	119		3G,5,CONT,
	8800	SGMR	45 C		2016.5		152			SWF
	2800	OTTA		1957.5	2000.5	6.5	98			
	2800	OTTA		2004	2016.5	51	428			
	2800	OTTA	30 PBI	2055	2055	65	5.2	2.4		
	2695	SGMR	1 S	2059.4	2101	1.4	8.4	3.4		CONT
	2800	OTTA	45 C	2100	2100.2	9	4.4	1.8		
	2695	PENT	1 S	2508	2501.5	4	5.8	2.2		
9	2695	BOUL	2 SF	0100.5	0102	4	5	2		
	2695	MANI	1 S	0100.8	0101.6	1.9	5.8	1.9		
	2695	MANI	4 S/F	0710.5	0712.4	5.3	106.2	35.4		
	8800	SGMR	3 S	1009.3	1012.7	5.2	283	60.9		3G,SWF
	2695	SGMR	3 S	1009.6	1010.3	3.7	29.2	8.8		3G,SWF

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JUL 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
	8800	SGMR	3 S	1133.4	1153.2	22.6	178	53.4		5,SWF
	2695	SGMR	3 S	1136.4	1146.4	20.9	118	35.4		5,SWF
	2800	OTTA		1206	1221	39 D	74			
	8800	SGMR	3 S	1207	1212.7	56.3	158	63.3		2,SWF
	2695	SGMR	3 S	1207	1221.1	47	64.3	25.7		2,SWF
	2800	OTTA	29 PBI	1245	1245	75	13.4	4.4		
	2800	OTTA	20 GRF	1415	1515	100	2.6	1.3		
	2800	OTTA	21 GRF	1625		275	17.8			
	2800	OTTA	3 S	1647	1648.3	4	121	22		
	2695	BOUL	3 S	1647	1649	3.5	103	34		
	2695	SGMR	3 S	1648.8	1649.2	2.2	140	56		5,SWF
	8800	SGMR	3 S	1648.9	1649.3	2.1	75	30		5,SWF
	2800	OTTA	1 S	1737	1740	5	5.6	2.6		
	2800	OTTA	4 S/F	1800.8	1801.2	1.2	12.8			
	2695	BOUL	8 S	1801	1801.5	1.5	14	5		
	8800	SGMR	47 GB	1805	1820.2	85	1660	660		4,SWF
	2800	OTTA	46F C	1818	1828.5	30	450	73		
	2800	OTTA		1818	1819.8	6	130			
	2695	BOUL	45 C	1818	1829	69.5D	450	150		
	2695	SGMR	3 S	1819.4	1828.2	70.6	486	190		4,SWF
	2800	OTTA		1824	1826	3.5	110			
	2800	OTTA		1827.5	1828.5	20.5	450			
	2800	OTTA	2 S/F	1852	1853.9	3	6.6	3.6		
10	2695	PENT	1 S	0107	0108.3	5	6	3		
	2695	MANI	4 S/F	0520.9	0523.1	3.5	29.8	9.9		
	2695	MANI	47 GB	0609.3	0614.8	52.7	835	264.8		
	2800	OTTA	20 GRF	1240	1335	140	4.4	2.6		
	8800	SGMR	3 S	1316.7	1318.7	6.3	36.4	10.9		SWF
	2800	OTTA	21 GRF	1510	1600	135	5.2	2.4		
	8800	SGMR	3 S	1549.9	1551.1	3.4	31.9	9.6		SWF
	2800	OTTA	1 S	1550.5	1551	1	1	.5		
	2800	OTTA	1 S	1555	1556.5	3	2	1		
	8800	SGMR	3 S	1706.5	1706.9	11.5	75.6	30.2		
	8800	SGMR	3 S	1726.2	1730.1	26.5	170	52.8		4,SWF
	2695	SGMR	3 S	1727.5	1732.2	13.2	34	12.3		4,SWF
	2800	OTTA	46F C	1728	1732	14	28.6	7.6		
	2800	OTTA	23 GRF	1750	1930	120	3.6			
	2695	SGMR	1 S	1819.9	1820.6	7.1	8.9	3.6		
	2800	OTTA	1 S	1820	1820.5	1	5.2	2.6		
	8800	SGMR	3 S	1820	1820.8	7	26.5	10.6		
	8800	SGMR	21 GRF	1835	1836.3	515	18.9	7.6		
	2695	SGMR	20 GRF	1835	1849.5	515	7.5	3		
	2800	OTTA	1 S	1848.5	1849	2	1.8	.9		
	2800	OTTA	1 S	1915.9	1916	1	3.2	1.4		
	2800	OTTA	23 GRF	2020	2225	250	4.6	2.2		
	8800	SGMR	3 S	2247.4	2248	2.6	91.4	36.6		
	2695	PENT	1 S	2327.8	2328	2	9.2	2.8		
11	2695	PENT	4 S/F	0122.9	0123	7	10	3.4		
	2695	SGMR	47 GB	1043.5	1053	155.2	4790	1437		4,5,SWF
	2695	SGMR	47 GB		1105.3		1790			4,5,SWF
	2695	SGMR	47 GB		1121.5		1760			4,5,SWF
	2695	SGMR	47 GB		1154.6		1160			4,5,SWF
	8800	SGMR	47 GB	1048	1052.4	142.5	18900	5670		4,5,SWF
	8800	SGMR	47 GB		1105.4		5410			4,5,SWF
	8800	SGMR	47 GB		1121.5		1970			4,5,SWF
	8800	SGMR	47 GB		1153.2		1260			4,5,SWF
	2800	OTTA	47 GB	1050	1052.5	95	2800	370		
	2800	OTTA	30 PBI	1225	1225	365	15.8	7.9		
	2800	OTTA	1 S	1238.5	1239	3.5	3.2	1.6		
	2800	OTTA	3 S	1246	1247.1	3	12	3		
	2800	OTTA	1 S	1312	1313	4	2.2	1.1		
	2800	OTTA	8 S	1351.9	1352	.7	5	1.7		
	2695	PENT	1 S	1416	1418	5	4.2	2		
	2800	OTTA	4 S/F	1611	1612.5	3	110	38		
	2695	SGMR	3 S	1611	1612.7	3	129.9	52		4,5
	8800	SGMR	3 S	1611.7	1612.5	3.3	276.9	110.8		4,5
	2695	BOUL	4 SF	1612	1613.5	2.5	108	36		
	2800	OTTA	2 S/F	1617	1618.5	2	7.2	3.4		
	2800	OTTA	1 S	1658.5	1659	1	7.2	3.6		
	2800	OTTA	8 S	1842.9	1842.9	.1	9.4			
	2695	PENT	23 GRF	2215	2231	210	8.2	4.1		
	8800	SGMR	47 GB	2225	2230.7	12	831.6	332.6		
	2695	SGMR	3 S	2226	2227.6	4	29.6	11.8		
	2695	MANI	4 S/F	2226.6	2227.5	1.1	73.7	24.7		
	2800	OTTA	3 S	2226.7	2227.5	2	25.8	12.9		
	2695	BOUL	3 S	2228	2229	2.5D	25	8		
	2695	PENT	8 S	2358	2358	.1	2.4			
	2695	PENT	8 S	2359	2359	.1	6			
	2695	PENT	3 S	2413	2413.1	2	44	11		
	2695	PENT	8 S	2420.1	2420.5	.5	4.2	2.1		
	2695	PENT	8 S	2448.8	2448.8	.1	5.4			
12	2695	MANI	3 S	0012.9	0013.1	2.1	132.6	44.2		

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	2800	OTTA	1 S	1050	1050.9	2	3	1.4		
	2800	OTTA	1 S	1145.5	1146	1	1.6	1		
	2800	OTTA	1 S	1210	1210.8	3.5	1.6	.7		
	2800	OTTA	1 S	1301.5	1302.7	3.5	3.4	1.2		
	2800	OTTA	21 GRF	1310	1334	125	7.2	3		
	2800	OTTA	1 S	1320.5	1321	2	2.8	1.4		
	2800	OTTA	8 S	1335.7	1336	.7	1.8	1		
	2800	OTTA	4 S/F	1352	1353.6	6	10.2	4		
	2695	SGMR	3 S	1352.4	1354.6	6.1	22	8.8		
	2800	OTTA	23 GRF	1550	1840	310	10.4	5.5		
	2800	OTTA	4 S/F	1559.5	1600.7	5	15.2	7.4		
	2695	SGMR	3 S	1559.7	1605.8	10.3	149	47		3G,SWF
	8800	SGMR	47 GB	1600	1605.8	10	761	228		3G,SWF
	2695	BOUL	45 C	1600.5	1603	4	16	5		
	2800	OTTA	3 S	1605	1605.9	5	118	28.2		
	2695	BOUL	3 S	1606	1606.5	5 D	117	39		
	2800	OTTA	8 S	1658	1658.2	.5	6.4			
	8800	SGMR	3 S	1759.5	1800	2.5	284	113		3G
	2695	SGMR	1 S	1759.7	1800	1.3	4.2	1.7		3G
	2800	OTTA	1 S	1759.9	1800	1	6.4			
	2800	OTTA	46F C	2049	2051	4	25.2	11.4		
	8800	SGMR	3 S	2049	2055	11	347	139		CONT,SWF
	2695	BOUL	2 SF	2050	2050.5U	1 D	16	5		
	2695	SGMR	3 S	2050.1	2051.1	9.9	22	8.8		CONT,SWF
	2695	BOUL	45 C	2051.5	2052	3.5D	16	5		
	2800	OTTA	3 S	2117.1	2117.5	2	18	9		
	2695	BOUL	4 SF	2118	2118.5U	2 D	16	5		
13	2695	MANI	3 S	0019.2	0019.4	1	19.7	6.5		
	2695	PENT	8 S	0019.7	0019.7	.2	7.6			
	2800	OTTA	20 GRF	1100	1115	105	4.6	2.3		
	2800	OTTA	23 GRF	1340	1450	180	6	3		
	2800	OTTA	8 S	1456.5	1456.5	.2	5			
	2800	OTTA	1A S	1626	1626.9	1.5	3	1.5		
	2800	OTTA	8 S	1626.9	1626.9	.1	9.4			
	2695	PENT	1 S	2001.8	2003	2.5	3.4	1.5		
	2695	SGMR	3 S	2005	2006.1	3	18.9	7.6		
	2695	PENT	4 S/F	2005.2	2006	3.5	17.6	7.8		
	2800	OTTA	2 S/F	2022	2022.8	6	5.4	2.6		
14	2800	OTTA	1 S	1331.5	1331.8	1	2.8	1.2		
	2800	OTTA	1 S	1535	1535.5	3	2.2	.8		
	2800	OTTA	2 S/F	1559	1559.1	1	9.8	2.5		
	2800	OTTA	28 GRF	1613	1631	40	7.4	2.5		
	2695	SGMR	3 S	1731.5	1732.8	8.2	13.5	5.4		2,5
	2800	OTTA	3 S	1732.5	1732.9	3	11.6	5.8		
	2800	OTTA	20 GRF	2133	2140	30	3.4	1.7		
	2800	OTTA	21 GRF	2216	2230	45	3.4	2		
	2800	OTTA	1 S	2223	2223.5	1.5	1.6	.8		
15	2695	PENT	3 S	0053.5	0054.7	2.5	31.8	8		
	2695	MANI	1 S	0054	0054.5	.6	9.2	3.1		
	2695	PENT	29 PBI	0056	0056	20	4.8	2.4		
	2695	PENT	21 GRF	0124	0140	30 D	5.8			
	2695	PENT	4 S/F	0130	0134	9	26.4	11		
	2695	BOUL	4 SF	0132.5E	0135.5U	4 D	22	7		
	2695	MANI	3 S	0404.2	0404.7	1.3	26.3	8.8		
	2800	OTTA	20 GRF	1100	1113	90	13.6	4.6		
	2800	OTTA	1 S	1305.2	1306	1.8	6.6	3.3		
	8800	SGMR	3 S	1305.5	1305.8	1.6	19.7	5.9		
	2695	SGMR	1 S	1305.5	1305.9	1.5	8.7	2.6		
	8800	SGMR	47 GB	1423.5	1425.2	11.5	1830	549		5,SWF
	2800	OTTA	3 S	1423.8	1425	16.2	450	48		
	2695	SGMR	47 GB	1423.9	1425.4	13.5	600	180		5,SWF
	2695	BOUL	47 GB	1424.5	1426	15 D	537	179		
	2800	OTTA	29 PBI	1440	1440	50	6.8	3.4		
	2800	OTTA	4 S/F	1948.5	1950	3.5	32	15		
	2695	BOUL	4 SF	1949.5	1951	8.5D	28	9		
	2800	OTTA	30 PBI	1952	1952	15	4.4	2		
	2800	OTTA	1 S	1954	1954.4	1.5	7.6	3.8		
	2695	PENT	20 GRF	2310	2440	160	2.8	1.4		
	2695	BOUL	3 S	2455	2455.5	4 U	22	7		
16	8800	SGMR	3 S	1249.4	1249.8	3.1	65.7	13.1		
	2800	OTTA	1 S	1555.8	1556	1.2	3.6			
	2800	OTTA	29 PBI	1557	1557	10	1.8	.9		
	2800	OTTA	1A S	1610.8	1611.5	1.5	3.6	1.8		
	2800	OTTA	8 S	1611.5	1611.5	.1E	3.6			
	2800	OTTA	29 PBI	1612.3	1612.3	18	1.8	.9		
	2800	OTTA	1 S	1822	1823	2	1.8	.9		
17	2695	PENT	20 GRF	0028	0030	50	3	1.5		
	2800	OTTA	21 GRF	1340		80	3.2			
	2800	OTTA	48 F	1341	1352	21	3.6			
	2800	OTTA	21 GRF	1424	1427	12	6	2.6		

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	2800	OTTA	8 S	1428.6	1428.6	.1E	12			
	2800	OTTA	21 GRF	1620	1626	30	4.4	1.6		
	2800	OTTA	1 S	1624	1624.5	1	2.6	1.3		
	2800	OTTA	20 GRF	1730	1800	80	3.2	1.6		
	2800	OTTA	20 GRF	2113	2120	16	3	1.4		
	8800	SGMR	3 S	2133	2134	5	323	129		3G,SWF
	2800	OTTA	20 GRF	2135	2139	20	5	2.4		
18	2695	PENT	47 GB	0017	0018.6	3	1000	85		
	2695	MANI	47 GB	0017.7	0018.2	1.9	895	296.6		IKES
	2695	PENT	29 PBI	0020	0020	40	6	3		
	2800	OTTA	3 S	1219	1219.5	1	20.6	9		
	2800	OTTA	20 GRF	1305	1315	35	1.8	1		
	2800	OTTA	23 GRF	1410	2135	585	10.6	6		
	2800	OTTA	20 GRF	1500	1538	65	6	2.4		
	8800	SGMR	45 C	1719.2	1723.7	20.4	83.8	33.5		SWF
	8800	SGMR	45 C		1724.4		88.4			SWF
	2800	OTTA	20 GRF	1815	1820	30	3	1.5		
	2800	OTTA	23 GRF	1935	2005	90	19	6.6		
	8800	SGMR	45 C	1941.4	1958	67.6	165	77.4		SWF
	8800	SGMR	45 C		2021.7		258			SWF
	2695	BOUL	40 F	1945.5	1959	44.5D	51	17		
	2695	SGMR	45 C	1947.5	1958.1	58.5	52.7	21.1		SWF
	2695	SGMR	45 C		2019.6		37.7			SWF
	2800	OTTA	4 S/F	1951	1958	13	47.6	23.4		
	2800	OTTA	4 S/F	2017	2022	9	33.8	17.2		
	2695	PENT	26 FAL	2355	2418	23	-3	-1.5		
	2695	BOUL	4 SF	2417.5	2419.5	3.5D				
19	2800	OTTA	1 S	1320	1321.2	6.5	5.8	2		
	2800	OTTA	8 S	1647	1647	.5	5			
	2800	OTTA	20 GRF	2050	2155	125	3	1.5		
20	2695	PENT	21 GRF	0009	0020	100 D	8.4			
	2695	PENT	1 S	0011.5	0013	5	6.6	3.3		
	2800	OTTA	1 S	1306.9	1307.1	1	2.8	1.4		
	2800	OTTA	27 RF	1500		170	2.8	2.4		
	2800	OTTA	24 R	1500	1520	20	2.8	1.4		
	2800	OTTA	24P R	1520		120	2.8			
	2800	OTTA	26 FAL	1720	1750	30	-2.8	-1.4		
	2695	PENT	240 R	1955	2023	28	2.6	1.3		
	2695	PENT	1 S	2142.9	2143.5	2	3	1.8		
	2695	BOUL	2 SF	2143 E	2144	2 D	4	1		
21	2800	OTTA	21 GRF	1535	1543	155	11.4	2.8		
	2800	OTTA	4 S/F	1538	1540	4	430			
	8800	SGMR	3 S	1538	1540	4	47.5	14.3		SWF
	2695	SGMR	3 S	1538.1	1539.9	7.3	102	30.6		SWF
	2695	BOUL	45 C	1538.5	1540.5	9.5U	332 U	111		
	2800	OTTA	8 S	1643.6	1643.6	.1E	22			
	2800	OTTA	2 S/F	1827	1827.1	1.2	2.2	1.1		
	2800	OTTA	21 GRF	1835	2000	385	13.6	8.2		
	2800	OTTA	3 S	1843.9	1843.9	1.2	15.8	2.6		
	2800	OTTA	3 S	1852.5	1857	10	126	43		
	2695	SGMR	3 S	1853.2	1856	16.8	140	56.1		SWF
	8800	SGMR	3 S	1854.5	1856.8	15.5	140	55		SWF
	2695	BOUL	3 S	1854.5	1857.5	16.5D	103	34		
	2800	OTTA	29 PBI	1902.5	1902.5	14	8.6	3.8		
22	2800	OTTA	2 S/F	1250	1251	3	9.6	4.8		
	2695	SGMR	3 S	1250.6	1257	7.4	35.9	10.8		
	2800	OTTA	4 S/F	1255.8	1257	3.2	14.6	4.8		
	2800	OTTA	29 PBI	1259	1259	9	2.4	1.2		
	2800	OTTA	27A RF	1310		150	3	2.5		
	2800	OTTA	24 R	1310	1330	20	3	1.6		
	2800	OTTA	1 S	1318	1319	1.2	1.2	.8		
	2800	OTTA	24P R	1330		100	3			
	2800	OTTA	26 FAL	1510	1540	30	-3	-1.5		
23	2800	OTTA	20 GRF	1447	1510	50	2.2	1.1		
	2800	OTTA	4 S/F	1654	1700	9	11.4	5.7		
	2800	OTTA	30 PBI	1703	1703	27	4.2	2.1		
	2800	OTTA	2 S/F	1721	1724	6	4.6	.8		
	2695	SGMR	1 S	1721.2	1724.2	5.2	6.4	1.9		3
	2800	OTTA	20 GRF	1745	1752	22	2.8	1.4		
	2800	OTTA	27 RF	1835		205	2.8	2.3		
	2800	OTTA	24 R	1835	1910	35	2.8	1.4		
	2800	OTTA	24P R	1910		140	2.8			
	2800	OTTA	26 FAL	2130	2200	30	-2.8	-1.4		
25	2800	OTTA	240 R	2140	2200	20	2.2	1.1		
28	2695	SGMR	3 S	1425.5	1425.7	.5	20.4	8.2		
29	2800	OTTA	28 GRF	1050	1115	260 D	7.4			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
JULY 1978

JUL 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
	2800	OTTA	20 GRF	1830	1850	50	2.2	1.2		
30	2800	OTTA	20 GRF	1827	1900	205	3	1.5		

Observatories:

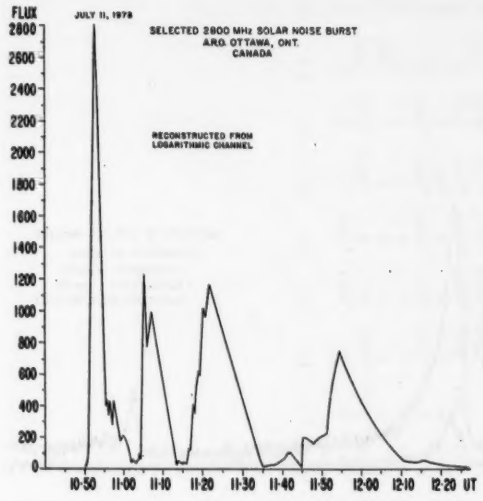
BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

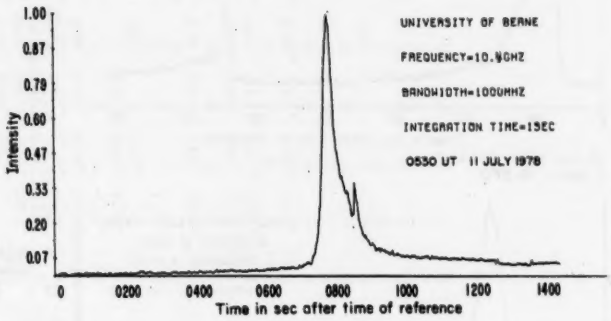
Explanation of Type Code:

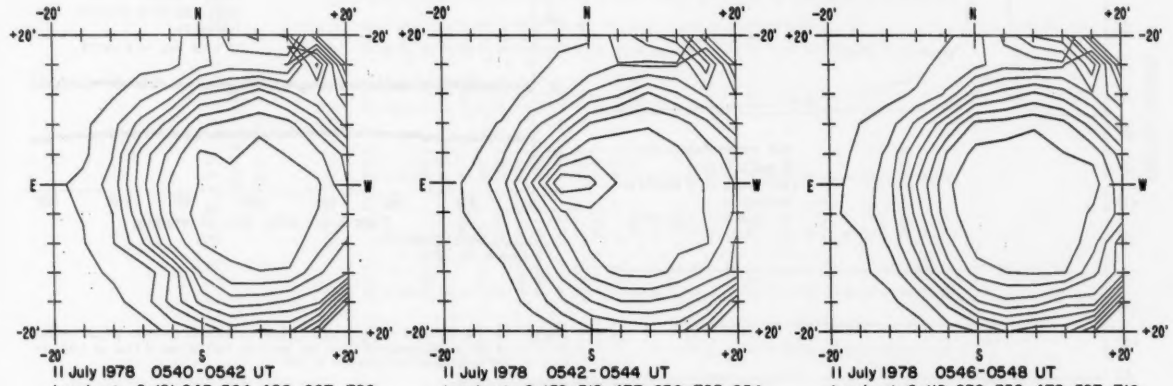
1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

SELECTED SOLAR NOISE BURST

JULY 11, 1978







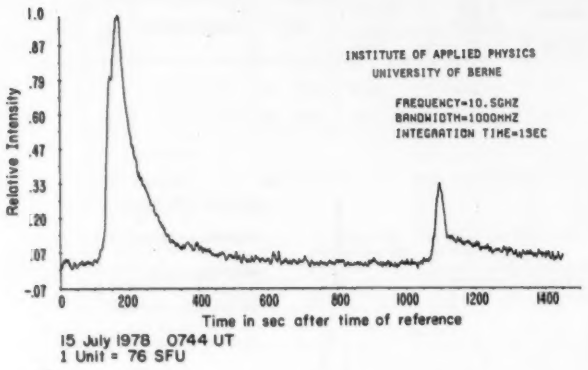
SUN AT 92.5 GHZ BW=1 GHZ, TAU=1 S 1 AVER. PICTS.

Note: These are preliminary solar radio maps from Berne Observatory taken prior to, during, and after the burst of 0542 UT 11 July 1978.

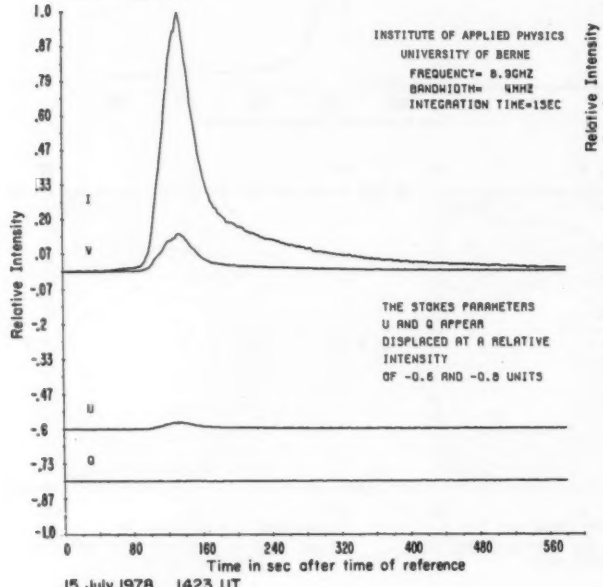
30
Jul 78

SELECTED SOLAR NOISE BURSTS

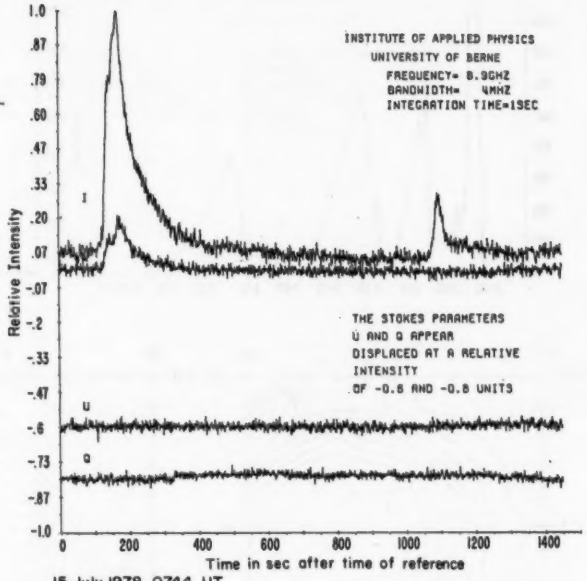
15 JULY 1978



15 July 1978 0744 UT
1 Unit = 76 SFU

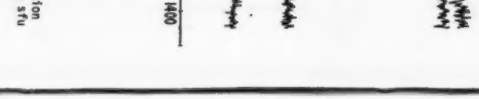


15 July 1978 1423 UT
1 Unit = 1353 SFU



15 July 1978 0744 UT
1 Unit = 73 SFU

Note: The two bursts of 15 July 1978 at 0744 UT exhibit circular polarization of 12% at 10.5 and 8.9 GHz. The burst at 1423 UT has a flux of 1346 sfu and a circular polarization of 13%.



SOLAR X-RAYS BY SATELLITE
SMS GOES
JULY 1978

.5 - 4Å Hourly Averages (10^{-5} watts/m^2)

MO	DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
7/	1	.002	.002	.001	.004	B	.003	.002	B	.001	.001	.003	.001	.001	.042	.010	.012	B	B	.001	.001	B	B	B	B	.004
7/	2	B	.004	B	B	B	B	.001	B	B	B	B	B	B	B	.046	.003	.004	.002	B	B	.009	.006	.001	B	.004
7/	3	.002	B	B	B	B	B	.008	B	B	B	B	B	B	.001	B	B	B	B	B	B	B	B	.001	.001	B
7/	4	B	B	B	B	B	.001	B	.001	B	.004	B	.001	B	B	B	.002	B	B	B	B	B	B	B	B	B
7/	5	B	B	B	B	B	B	B	B	B	B	B	.006	.031	.002	B	B	B	.003	.011	.005	.002	.001	B	M	.003
7/	6	M	M	B	B	B	B	B	.003	B	B	.001	B	.005	B	B	.022	B	B	B	B	.003	B	B	B	.002
7/	7	.002	.001	B	B	.009	.122	.006	.002	.004	.184	.017	.003	.031	.004	.009	.003	.007	.004	.049	.002	.002	.001	B	.001	.019
7/	8	B	.002	B	.003	B	.001	.001	.001	.001	B	.001	.001	.001	.001	B	B	B	.002	.003	.092	.156	.067	.032	.013	.016
7/	9	.005	.005	.003	.003	.003	.008	.006	.021	.013	.009	.022	.021	.354	.223	.037	.010	.042	.037	3.55	.398	.063	.021	.015	.020	.204
7/	10	.008	.223	.086	.076	.015	.046	6.74	.420	.121	.062	.016	.012	.010	.129	.010	.011	.008	.515	.208	.282	.131	.043	.021	.012	.384
7/	11	.031	.064	.003	.013	.345	.364	.059	.021	.005	.019	2.37	7.94	.405	.094	.038	.033	.035	.012	.005	.003	.049	.004	.698	.026	.526
7/	12	.027	.010	.122	.099	.002	.008	.003	.002	.006	.028	.035	.003	.003	.034	.005	.005	.046	.010	.014	.005	.050	.029	.002	.002	.023
7/	13	.002	.001	.005	.002	.004	.001	.001	.002	.002	.001	.002	.003	B	B	.002	.001	.002	B	B	B	.002	B	B	.001	.002
7/	14	B	.001	B	B	B	.002	B	B	.001	.001	B	.004	B	B	B	B	.004	.002	.001	B	B	.001	.002	.001	.001
7/	15	.029	.014	.002	B	.003	.002	B	B	B	B	.001	.005	.002	.001	.030	.007	M	.002	B	.002	B	B	B	B	.005
7/	16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	.001	B	B	B	B	B	B	B	B
7/	17	.001	.001	.002	B	B	B	B	B	B	.001	.001	B	B	B	.006	B	B	B	B	B	.002	.031	.002	B	.002
7/	18	.017	B	B	B	B	B	B	B	.009	.016	B	B	B	.005	.002	.006	.002	.044	.004	.095	.591	.048	.015	.008	.035
7/	19	.003	.002	.001	.002	B	.004	B	B	B	B	B	B	B	.005	B	B	B	B	B	B	.002	.005	B	B	.001
7/	20	.075	.002	B	.001	B	.002	.001	.001	B	.001	B	.002	B	.003	.002	.008	.013	.004	.001	.002	.001	.003	.002	.003	.006
7/	21	.001	.003	.002	.001	.014	.002	.003	.002	.006	.002	.004	.010	.004	.003	.003	.048	.026	.002	.119	.588	.033	.007	.001	.002	.037
7/	22	B	B	.002	B	.001	.001	.002	.006	M	M	M	M	.003	.127	.015	.001	B	B	B	B	B	B	B	B	.008
7/	23	B	B	.001	B	B	.003	B	B	B	B	B	.002	.003	.002	.001	.002	.017	.033	.041	.023	.013	.006	.003	.003	.007
7/	24	.002	.002	.001	.001	B	B	B	B	B	B	B	B	.001	.001	B	B	B	B	B	B	B	.002	B	B	B
7/	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	.001	B	B	B
7/	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7/	27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	.001	B	B	B	B	.001	B	B	B	B	B
7/	28	B	B	B	B	B	.001	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7/	29	B	B	B	B	B	B	B	B	B	B	.005	.008	B	B	B	B	B	B	B	M	B	B	B	B	B
7/	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7/	31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE
SMS GOES
JULY 1978

1 - 8Å Hourly Averages (10^{-4} watts/m^2)

MO	DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
7/	1	.012	.012	.010	.015	.010	.013	.012	.008	.009	.010	.012	.010	.009	.051	.028	.035	.009	.007	.009	.010	.008	.008	.007	.006	.015
7/	2	.007	.013	.007	.005	.005	.006	.008	.006	.007	.006	.006	.006	.006	.006	.051	.013	.017	.013	.009	.007	.019	.021	.010	.007	.015
7/	3	.009	.006	.005	.005	.005	.005	.016	.005	.004	.005	.006	.004	.004	.007	.005	.005	.004	.004	.004	.004	.004	.004	.007	.008	.005
7/	4	.007	.005	.004	.003	.004	.005	.004	.005	.005	.008	.004	.006	.004	.004	.004	.007	.005	.004	.004	.005	.004	.003	.004	.003	.004
7/	5	.003	.003	.003	.004	.004	.004	.003	.003	.004	.003	.003	.010	.043	.010	.005	.004	.004	.008	.024	.015	.009	.006	.005	M	.012
7/	6	M	M	.004	.003	.003	.003	.005	.010	.007	.006	.006	.004	.010	.004	.003	.023	.006	.005	.004	.004	.007	.004	.004	.004	.007
7/	7	.006	.005	.005	.004	.018	.073	.016	.010	.011	.104	.029	.013	.039	.014	.017	.013	.015	.013	.061	.013	.012	.010	.008	.008	.018
7/	8	.008	.009	.008	.012	.008	.008	.009	.009	.008	.006	.008	.008	.007	.008	.007	.006	.007	.010	.012	.065	.143	.089	.062	.036	.038
7/	9	.023	.020	.013	.013	.014	.019	.015	.030	.023	.024	.033	.036	.243	.205	.064	.032	.053	.057	1.50	.327	.083	.044	.031	.033	.222
7/10		.022	.131	.101	.083	.031	.062	2.87	.351	.131	.088	.039	.031	.027	.106	.030	.028	.025	.309	.162	.200	.112	.065	.038	.029	.094	
7/11		.033	.063	.017	.027	.263	.254	.100	.044	.021	.030	1.86	4.58	.343	.120	.070	.059	.054	.033	.022	.017	.052	.018	.360	.047	.090	
7/12		.042	.022	.069	.035	.013	.019	.012	.013	.019	.036	.041	.018	.016	.046	.023	.021	.054	.032	.036	.024	.043	.043	.012	.012	.030	
7/13		.012	.010	.016	.012	.014	.010	.008	.010	.010	.009	.011	.014	.008	.008	.010	.010	.020	.008	.007	.008	.010	.008	.008	.009	.009	
7/14		.008	.010	.009	.007	.007	.009	.007	.006	.009	.010	.009	.013	.007	.007	.007	.008	.015	.011	.009	.007	.007	.008	.010	.009	.009	
7/15		.025	.027	.011	.006	.010	.009	.008	.007	.007	.007	.009	.020	.011	.010	.033	.020	M	.009	.007	.008	.007	.006	.006	.007	.011	
7/16		.009	.007	.006	.006	.007	.006	.006	.007	.006	.006	.006	.007	.007	.007	.007	.007	.009	.006	.006	.006	.006	.006	.005	.006	.007	
7/17		.009	.008	.009	.007	.007	.007	.006	.006	.009	.009	.007	.007	.007	.007	.007	.014	.006	.007	.006	.008	.007	.008	.029	.011	.007	.010
7/18		.023	.006	.005	.005	.005	.005	.005	.011	.022	.007	.005	.005	.010	.009	.014	.010	.040	.015	.055	.367	.070	.044	.026	.055	
7/19		.016	.013	.010	.011	.008	.014	.009	.008	.007	.007	.007	.008	.006	.014	.007	.006	.006	.005	.005	.005	.007	.014	.006	.005	.007	
7/20		.071	.013	.007	.008	.006	.008	.007	.006	.005	.006	.007	.008	.007	.010	.009	.019	.021	.013	.008	.010	.008	.011	.009	.010	.011	
7/21		.008	.011	.009	.008	.018	.009	.010	.010	.017	.010	.012	.017	.014	.012	.010	.040	.048	.016	.068	.450	.096	.036	.017	.013	.068	
7/22		.009	.007	.008	.007	.007	.007	.007	.011	M	M	M	M	.006	.103	.040	.010	.005	.004	.005	.004	.003	.003	.004	.004	.016	
7/23		.003	.004	.006	.006	.004	.007	.003	.003	.006	.003	.003	.007	.009	.009	.006	.008	.012	.029	.054	.052	.036	.023	.016	.012	.022	
7/24		.010	.009	.008	.007	.006	.005	.005	.004	.004	.004	.004	.004	.005	.005	.004	.004	.004	.003	.003	.003	.003	.003	.007	.003	.004	
7/25		.003	.003	.002	.002	.002	.002	.002	.002	.004	.003	.002	.003	.002	.002	.002	.002	.002	.002	.002	.002	.002	.005	.005	.003	.003	
7/26		.002	.002	.002	.002	.002	.003	.003	.002	.002	.002	.002	.003	.003	.003	.002	.002	.002	.002	.002	.004	.003	.002	.004	.003	.002	.003
7/27		.003	.003	.004	.004	.003	.002	.002	.002	.002	.002	.002	.002	.002	.002	.005	.004	.002	.002	.003	.006	.005	.004	.003	.003	.003	
7/28		.002	.002	.002	.002	.004	.006	.004	.002	.003	.003	.002	.004	.003	.002	.002	.002	.002	.002	.002	.002	.002	.002	.002	.002	.002	.002
7/29		.002	.007	.002	.002	.003	.002	.002	.002	.002	.002	.011	.025	.008	.004	.002	.003	.003	.002	.004	M	.002	.002	.001	.002	.003	
7/30		.002	.002	.002	.002	.002	.001	.001	.001	.001	.002	.002	.002	.002	.002	.002	.002	.002	.002	.004	.003	.002	.002	.001	.001	.002	
7/31		.001	.002	.001	.001	.001	.001	.002	.001	.002	.001	.002	.002	.004	.003	.003	.004	.002	.002	.002	.002	.002	.001	.001	.001	.002	

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE

GOES

JULY 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
1	0300	1.2E-08	1.1E-06	0306	3.8E-07	4.6E-06	0309	8.2E-08	2.5E-06
1	0532	1.0E-08	1.0E-06	0536	5.3E-08	2.1E-06	0553	3.3E-08	1.5E-06
1	0638	2.0E-08	1.2E-06	0641	5.2E-08	2.0E-06	0643	3.4E-08	1.4E-06
1	1033	1.6E-08	1.0E-06	1040	9.5E-08	2.2E-06	1046	3.3E-08	1.6E-06
1	1123	5.4E-09	7.5E-07	1130	5.0E-08	1.4E-06	1139	1.2E-08	1.0E-06
1	1255	7.3E-09	8.6E-07	1259	9.2E-08	1.7E-06	1304	2.1E-08	1.2E-06
1	1330	2.7E-08	1.3E-06	1347	2.0E-06	1.8E-05	1356	4.5E-07	9.5E-06
2	0129	1.5E-08	8.3E-07	0144	1.2E-07	2.6E-06	0156	2.1E-08	1.7E-06
2	0800	5.3E-09	6.4E-07	0804	3.3E-08	1.0E-06	0816	1.1E-08	8.5E-07
2	1400	2.8E-09	5.1E-07	1411	1.7E-06	1.4E-05	1424	6.4E-07	7.3E-06
2	1458	3.3E-08	1.3E-06	1504	7.1E-08	2.0E-06	1510	3.1E-08	1.6E-06
2	2024	8.7E-09	7.5E-07	2040	2.2E-07	3.6E-06	2128	4.8E-08	2.2E-06
2	2146	2.4E-08	1.5E-06	2151	1.6E-07	3.3E-06	2154	8.6E-08	2.3E-06
2	2251	8.6E-09	8.1E-07	2256	3.9E-08	1.3E-06	2303	1.5E-08	1.0E-06
3	0034	7.5E-09	5.9E-07	0043	1.0E-07	2.0E-06	0052	3.1E-08	1.2E-06
3	0612	3.1E-09	4.8E-07	0622	3.2E-07	4.1E-06	0633	9.5E-08	2.2E-06
3	0721	2.3E-09	4.0E-07	0724	1.6E-08	6.1E-07	0726	5.9E-09	5.0E-07
3	2315	1.1E-08	8.4E-07	2319	3.1E-08	1.2E-06	2322	1.5E-08	9.7E-07
4	0005	7.9E-09	7.0E-07	0009	8.1E-08	1.8E-06	0012	2.8E-08	1.1E-06
4	0531	2.3E-09	3.2E-07	0537	8.7E-08	1.4E-06	0543	1.6E-08	8.0E-07
4	0730	3.1E-09	3.8E-07	0735	5.5E-08	1.0E-06	0746	1.3E-08	7.0E-07
4	1525	3.3E-09	4.2E-07	1539	7.5E-08	1.4E-06	1551	1.7E-08	9.0E-07
5	1136	9.5E-09	4.8E-07	1213	7.2E-07	7.4E-06	1232	1.6E-07	3.8E-06
5	1746	2.5E-08	7.6E-07	1803	1.5E-07	2.9E-06	1910	5.5E-08	1.8E-06
6	1007	8.2E-10	4.5E-07	1013	6.4E-08	1.2E-06	1024	1.6E-08	8.0E-07
6	1204	4.8E-09	4.3E-07	1211	2.7E-07	2.7E-06	1219	6.4E-08	1.4E-06
6	2025	5.4E-09	3.9E-07	2033	1.0E-07	1.9E-06	2041	4.9E-08	1.1E-06
7	0150	6.2E-09	4.1E-07	0155	1.0E-07	1.3E-06	0201	2.6E-08	8.4E-07
7	0359	2.6E-09	3.8E-07	0407	3.0E-07	3.3E-06	0433	6.2E-08	1.8E-06
7	0528	7.6E-09	6.2E-07	0541	5.5E-06	2.8E-05	0550	1.6E-06	1.3E-05
7	0756	1.6E-08	8.5E-07	0803	2.0E-07	3.1E-06	0808	4.9E-08	1.7E-06
7	0928	2.2E-08	7.4E-07	0942	6.8E-06	3.2E-05	0955	1.8E-06	1.6E-05
7	1206	1.5E-08	9.3E-07	1213	2.1E-06	1.7E-05	1220	6.7E-07	8.6E-06
7	1437	3.7E-09	6.5E-07	1445	5.7E-07	5.5E-06	1453	1.3E-07	3.0E-06
7	1636	1.5E-08	8.9E-07	1641	3.1E-07	3.5E-06	1646	7.0E-08	2.0E-06
7	1651	5.6E-08	1.7E-06	1657	1.9E-07	3.5E-06	1703	8.5E-08	2.4E-06
7	1755	1.7E-08	1.0E-06	1805	1.7E-06	1.2E-05	1825	3.1E-07	6.6E-06
8	0822	9.7E-09	7.1E-07	0826	4.7E-08	1.3E-06	0828	1.9E-08	9.9E-07
8	1239	5.1E-09	5.9E-07	1246	4.7E-08	1.1E-06	1304	9.3E-09	8.6E-07
8	1943	3.3E-08	1.6E-06	1957	6.0E-06	3.6E-05	2010	2.1E-06	1.8E-05
9	0059	2.5E-08	1.9E-06	0103	1.9E-07	3.3E-06	0110	7.1E-08	2.5E-06
9	0506	4.1E-08	1.5E-06	0510	1.3E-07	2.6E-06	0513	5.1E-08	2.0E-06
9	0551	6.1E-08	1.9E-06	0559	3.9E-07	3.9E-06	0603	1.4E-07	2.9E-06
9	0707	1.1E-07	1.8E-06	0714	1.6E-06	1.2E-05	0717	3.9E-07	6.0E-06
9	0848	4.7E-08	1.5E-06	0854	6.2E-07	5.1E-06	0900	1.4E-07	3.2E-06
9	1007	6.0E-08	2.1E-06	1012	2.0E-06	1.4E-05	1016	5.5E-07	6.8E-06
9	1211	9.5E-07	8.0E-06	1249	5.9E-06	3.8E-05	1322	2.5E-06	2.3E-05
9	1635	8.1E-08	2.7E-06	1650	3.6E-06	2.5E-05	1652	1.3E-06	1.2E-05
9	1736	1.5E-07	3.9E-06	1742	1.2E-06	1.1E-05	1750	3.5E-07	7.0E-06
9	1804	1.6E-07	4.6E-06	1832	9.1E-05	3.4E-04	1847	3.1E-05	1.7E-04
9	2223	9.3E-08	2.6E-06	2227	4.1E-07	4.5E-06	2235	1.5E-07	3.4E-06
9	2306	3.7E-08	1.9E-06	2312	1.2E-06	8.9E-06	2317	3.6E-07	5.4E-06
10	0012	5.5E-08	1.9E-06	0020	1.6E-07	3.0E-06	0030	8.4E-08	2.4E-06
10	0134	9.3E-08	2.2E-06	0146	1.2E-05	5.3E-05	0156	2.9E-06	2.7E-05
10	0233	4.5E-07	5.7E-06	0242	1.3E-06	1.1E-05	0252	5.5E-07	8.2E-06
10	0307	3.6E-07	5.7E-06	0314	1.9E-06	2.0E-05	0321	1.2E-06	1.3E-05
10	0520	1.5E-07	3.8E-06	0523	2.8E-06	2.3E-05	0525	1.0E-06	1.2E-05
10	0531	3.6E-07	6.0E-06	0534	9.3E-07	8.6E-06	0538	4.9E-07	7.0E-06
10	0600	9.0E-08	2.6E-06	0623	1.8E-04	8.1E-04	0632	9.3E-05	4.0E-04
10	0922	6.1E-07	8.9E-06	0925	1.7E-06	1.4E-05	0929	7.4E-07	1.0E-05

SOLAR X-RAYS BY SATELLITE

GOES

JULY 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
10	1314	2.6E-07	4.3E-06	1321	5.6E-06	2.9E-05	1332	2.0E-06	1.6E-05
10	1549	1.4E-07	2.9E-06	1553	3.1E-07	4.4E-06	1559	1.3E-07	3.5E-06
10	1725	1.8E-06	1.5E-05	1735	1.3E-05	7.9E-05	1741	7.4E-06	4.7E-05
10	1913	2.0E-06	1.5E-05	1921	9.6E-06	4.5E-05	1933	3.4E-06	2.8E-05
10	2025	1.8E-07	2.9E-06	2039	2.0E-06	2.2E-05	2042	1.6E-06	1.2E-05
10	2131	1.6E-07	4.0E-06	2137	1.1E-06	9.6E-06	2146	4.4E-07	6.6E-06
11	0049	3.6E-08	1.8E-06	0102	3.5E-06	2.0E-05	0111	1.0E-06	1.0E-05
11	0122	1.6E-07	3.8E-06	0128	6.3E-07	7.5E-06	0130	3.0E-07	5.6E-06
11	0300	3.3E-08	1.6E-06	0312	1.0E-07	2.4E-06	0318	4.2E-08	2.0E-06
11	0335	2.4E-08	1.6E-06	0341	3.3E-07	4.6E-06	0348	1.3E-07	3.0E-06
11	0352	4.8E-08	2.0E-06	0401	2.4E-06	1.8E-05	0406	6.2E-07	1.0E-05
11	0421	2.9E-08	1.9E-06	0433	1.4E-05	8.2E-05	0444	3.8E-06	3.9E-05
11	0539	1.0E-06	1.3E-05	0546	2.0E-05	8.7E-05	0552	5.7E-06	4.8E-05
11	0703	2.9E-07	5.7E-06	0708	7.2E-07	8.4E-06	0713	3.9E-07	7.0E-06
11	0933	3.0E-08	1.8E-06	0939	1.0E-06	7.0E-06	0947	2.4E-07	4.4E-06
11	1007	1.4E-07	2.7E-06	1014	3.1E-07	4.2E-06	1019	1.6E-07	3.5E-06
11	1031	2.6E-07	3.9E-06	1034	6.8E-07	5.9E-06	1036	3.2E-07	4.7E-06
11	1043	2.3E-07	3.9E-06	1104	1.8E-04	1.5E-03	1112	1.8E-04	7.8E-04
11	1645	1.4E-07	3.7E-06	1651	1.5E-06	1.2E-05	1657	4.6E-07	7.1E-06
11	2018	2.8E-08	1.3E-06	2035	2.0E-06	1.4E-05	2043	5.3E-07	7.4E-06
11	2224	8.8E-08	2.4E-06	2229	4.4E-05	2.3E-04	2235	1.9E-05	1.0E-04
12	0010	9.9E-08	2.5E-06	0021	1.0E-06	1.0E-05	0027	3.1E-07	6.1E-06
12	0108	4.4E-08	2.0E-06	0114	4.3E-07	4.6E-06	0123	1.3E-07	3.1E-06
12	0241	5.3E-08	1.7E-06	0300	1.0E-05	4.8E-05	0305	2.9E-06	2.3E-05
12	0521	5.9E-08	1.9E-06	0529	4.2E-07	4.8E-06	0532	1.4E-07	3.2E-06
12	0807	3.7E-08	1.4E-06	0813	2.5E-07	3.2E-06	0821	7.3E-08	2.2E-06
12	0859	3.2E-08	1.6E-06	0909	1.7E-06	1.2E-05	0913	3.2E-07	5.8E-06
12	1011	4.1E-08	1.9E-06	1019	1.7E-06	1.2E-05	1026	4.8E-07	6.8E-06
12	1053	1.9E-08	1.8E-06	1057	1.4E-07	2.8E-06	1101	4.7E-08	2.2E-06
12	1301	3.5E-08	1.7E-06	1304	1.2E-07	2.5E-06	1308	5.3E-08	2.1E-06
12	1321	2.0E-07	2.8E-06	1328	1.4E-06	9.5E-06	1336	3.4E-07	6.0E-06
12	1530	4.0E-08	1.9E-06	1535	1.3E-07	3.2E-06	1540	5.8E-08	2.5E-06
12	1559	1.0E-07	2.8E-06	1614	1.6E-06	1.1E-05	1621	5.3E-07	7.1E-06
12	1757	7.2 E-08	2.6E-06	1802	4.4E-07	5.7E-06	1808	1.5E-07	4.1E-06
12	2048	3.2E-08	1.8E-06	2058	5.8E-06	3.1E-05	2103	1.2E-06	1.4E-05
12	2114	2.1E-07	3.7E-06	2118	5.9E-07	5.8E-06	2120	3.1E-07	4.7E-06
13	0221	1.2E-08	1.0E-06	0228	2.6E-07	3.7E-06	0237	5.1E-08	2.3E-06
13	0425	2.2E-08	1.1E-06	0428	4.7E-08	2.0E-06	0430	5.1E-08	1.5E-06
13	0444	1.4E-08	1.0E-06	0454	1.3E-07	2.5E-06	0500	2.3E-08	1.7E-06
13	0538	6.8E-09	8.2E-07	0541	8.9E-08	1.8E-06	0544	2.8E-08	1.2E-06
13	0622	5.4E-09	7.0E-07	0626	6.5E-08	1.3E-06	0630	1.5E-08	9.6E-07
13	0741	2.0E-08	9.8E-07	0746	9.1E-08	1.9E-06	0749	2.9E-08	1.3E-06
13	0809	7.2E-09	7.4E-07	0812	3.6E-08	1.1E-06	0814	1.4E-08	9.3E-07
13	0831	1.4E-08	9.6E-07	0834	1.6E-07	2.1E-06	0837	4.2E-08	1.4E-06
13	1013	7.2E-09	8.3E-07	1017	1.2E-07	1.8E-06	1020	3.3E-08	1.3E-06
13	1122	3.9E-08	1.2E-06	1116	5.6E-08	1.8E-06	1130	3.0E-08	1.5E-06
13	1456	1.4E-08	1.0E-06	1459	1.3E-07	2.0E-06	1502	3.2E-08	1.3E-06
13	1624	6.1E-09	8.0E-07	1634	5.1E-08	1.3E-06	1639	1.5E-08	1.0E-06
13	2003	1.3E-08	8.2E-07	2006	7.5E-08	1.9E-06	2011	3.0E-08	1.2E-06
13	2305	9.2E-09	8.3E-07	2310	6.7E-08	1.9E-06	2313	3.4E-08	1.3E-06
14	0524	5.9E-09	7.5E-07	0528	1.0E-07	2.1E-06	0534	2.8E-08	1.3E-06
14	1059	6.9E-09	7.9E-07	1106	3.1E-07	3.8E-06	1111	6.4E-08	2.0E-06
14	1132	8.7E-09	8.5E-07	1137	3.7E-08	1.4E-06	1142	1.2E-08	1.0E-06

SOLAR X-RAYS BY SATELLITE

GOES

JULY 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
14	1557	4.9E-09	7.8E-07	1601	3.5E-08	1.1E-06	1607	8.3E-09	8.3E-07
14	1623	3.7E-08	1.2E-06	1632	1.9E-07	3.3E-06	1638	5.7E-08	2.2E-06
14	1730	1.3E-08	1.1E-06	1733	1.4E-07	2.6E-06	1735	2.1E-08	1.2E-06
15	0050	1.9E-08	1.0E-06	0055	3.5E-06	2.2E-05	0102	7.4E-07	1.0E-05
15	0130	2.9E-08	1.0E-06	0144	1.3E-07	2.3E-06	0200	3.9E-08	1.6E-06
15	0402	3.1E-09	5.8E-07	0410	1.5E-07	2.3E-06	0416	3.9E-08	1.3E-06
15	1049	3.8E-08	1.4E-06	1052	4.4E-08	2.1E-06	1059	2.7E-08	1.7E-06
15	1422	8.9E-09	8.4E-07	1428	1.6E-06	1.0E-05	1438	4.1E-07	5.4E-06
15	1516	3.3E-08	1.5E-06	1520	3.3E-07	3.4E-06	1524	5.5E-08	2.1E-06
15	1720	9.7E-09	7.6E-07	1723	4.1E-08	1.0E-06	1726	1.5E-08	8.9E-07
15	1947	4.3E-09	6.2E-07	1954	1.2E-07	2.1E-06	1959	3.6E-08	1.2E-06
16	1610	5.2E-09	7.0E-07	1616	4.4E-08	1.3E-06	1625	1.4E-08	1.0E-06
16	1944	4.6E-09	5.9E-07	1948	6.7E-08	1.1E-06	1952	1.7E-08	8.2E-07
17	0154	1.0E-08	7.6E-07	0159	6.3E-08	2.2E-06	0203	3.7E-08	1.4E-06
17	0244	8.1E-09	7.5E-07	0250	4.3E-08	1.3E-06	0258	1.5E-08	1.0E-06
17	1029	1.5E-08	9.4E-07	1033	7.9E-08	2.0E-06	1035	4.7E-08	1.4E-06
17	1340	4.1E-09	5.5E-07	1409	1.5E-07	2.2E-06	1418	4.0E-08	1.3E-06
17	1836	6.8E-09	7.6E-07	1840	6.5E-08	1.4E-06	1843	1.5E-08	1.0E-06
17	2115	1.2E-08	7.0E-07	2122	4.2E-08	1.2E-06	2128	1.2E-08	9.1E-07
17	2131	9.3E-09	8.1E-07	2136	1.3E-06	8.7E-06	2150	2.9E-07	4.5E-06
18	0015	1.0E-08	6.5E-07	0025	7.7E-07	6.8E-06	0035	1.5E-07	3.7E-06
18	0852	2.1E-08	9.5E-07	0900	1.6E-06	8.5E-06	0908	2.5E-07	4.2E-06
18	1303	1.7E-08	6.2E-07	1309	3.6E-07	3.0E-06	1316	8.3E-08	1.7E-06
18	1426	1.7E-08	9.6E-07	1429	5.8E-08	2.0E-06	1435	3.4E-08	1.4E-06
18	1529	3.3E-08	1.0E-06	1539	2.3E-07	2.7E-06	1551	5.3E-08	1.8E-06
18	1717	2.6E-08	1.1E-06	1725	3.7E-06	2.1E-05	1730	1.3E-06	1.0E-05
18	1944	2.4E-07	3.2E-06	2023	1.1E-05	6.0E-05	2034	3.0E-06	3.1E-05
19	0458	1.1E-08	8.5E-07	0502	3.5E-08	1.2E-06	0508	1.5E-08	1.0E-06
19	0510	1.7E-08	1.0E-06	0518	1.5E-07	2.6E-06	0528	2.9E-08	1.8E-06
19	1318	6.5E-09	6.6E-07	1336	1.8E-07	2.9E-06	1344	3.2E-08	1.7E-06
19	2046	5.4E-09	5.1E-07	2123	1.1E-07	2.2E-06	2136	2.8E-08	1.3E-06
20	0001	4.0E-09	5.4E-07	0018	2.2E-06	1.4E-05	0038	4.4E-07	7.4E-06
20	0313	1.2E-08	7.5E-07	0318	6.7E-08	1.9E-06	0323	3.6E-08	1.3E-06
20	0550	2.6E-08	8.4E-07	0556	1.3E-07	2.0E-06	0600	7.7E-08	1.4E-06
20	0737	2.4E-08	7.8E-07	0741	9.4E-08	1.9E-06	0743	4.1E-08	1.2E-06
20	1129	1.5E-08	6.4E-07	1135	7.3E-08	1.1E-06	1143	2.2E-08	8.9E-07
20	1320	5.1E-09	6.2E-07	1329	1.4E-07	2.3E-06	1333	3.3E-08	1.2E-06
20	1427	1.1E-08	7.0E-07	1434	7.0E-08	2.2E-06	1438	5.6E-08	1.4E-06
20	1516	1.4E-07	2.5E-06	1520	3.5E-07	4.2E-06	1525	1.3E-07	3.1E-06
20	1604	2.0E-08	1.0E-06	1610	7.7E-07	5.3E-06	1621	1.5E-07	3.0E-06
20	1702	2.7E-08	1.2E-06	1707	1.5E-07	2.4E-06	1712	4.4E-08	1.7E-06
20	1728	4.6E-08	1.2E-06	1731	7.6E-08	2.0E-06	1733	6.8E-08	1.5E-06
20	1854	1.0E-08	8.0E-07	1904	1.0E-07	1.7E-06	1913	3.5E-08	1.2E-06
20	2126	2.2E-08	1.0E-06	2131	1.4E-07	2.3E-06	2135	4.2E-08	1.6E-06
21	0109	6.4E-09	6.8E-07	0116	1.6E-07	2.4E-06	0123	5.5E-08	1.5E-06
21	0428	1.6E-08	8.2E-07	0433	8.0E-08	1.2E-06	0437	3.3E-08	1.0E-06
21	0445	1.2E-08	8.0E-07	0452	1.3E-06	1.0E-05	0456	2.3E-07	4.9E-06
21	0604	1.9E-08	9.4E-07	0608	1.0E-07	2.0E-06	0615	5.7E-08	1.4E-06
21	0748	1.8E-08	9.7E-07	0751	1.0E-07	1.9E-06	0759	3.8E-08	1.3E-06
21	0810	1.8E-08	9.9E-07	0813	7.5E-08	1.5E-06	0817	2.6E-08	1.2E-06
21	0824	2.1E-08	1.0E-06	0835	1.5E-07	2.8E-06	0850	4.6E-08	1.9E-06
21	1041	4.0E-08	1.2E-06	1046	3.2E-07	3.3E-06	1048	9.7E-08	1.9E-06
21	1117	4.7E-08	1.2E-06	1123	2.2E-07	2.4E-06	1131	6.2E-08	1.7E-06
21	1146	1.5E-08	9.2E-07	1155	3.4E-07	3.8E-06	1206	5.6E-08	2.2E-06

SOLAR X-RAYS BY SATELLITE

GOES

JULY 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
21	1258	1.3E-08	9.3E-07	1303	1.3E-07	2.0E-06	1306	4.1E-08	1.4E-06
21	1323	2.5E-08	1.1E-06	1326	6.4E-08	2.2E-06	1330	4.4E-08	1.5E-06
21	1420	2.0E-08	9.4E-07	1425	7.2E-08	1.8E-06	1431	3.8E-08	1.3E-06
21	1449	1.0E-08	8.3E-07	1452	4.6E-08	1.2E-06	1455	1.6E-08	9.6E-07
21	1517	7.2E-08	1.5E-06	1522	3.4E-07	3.5E-06	1526	1.0E-07	2.3E-06
21	1538	6.6E-08	1.6E-06	1555	1.4E-06	1.1E-05	1614	3.4E-07	6.4E-06
21	1822	3.7E-08	1.2E-06	1909	1.4E-05	8.0E-05	1931	3.8E-06	4.0E-05
21	2335	1.0E-08	1.1E-06	2338	1.2E-07	2.0E-06	2340	6.5E-08	1.6E-06
22	0226	8.6E-09	7.0E-07	0230	6.3E-08	1.1E-06	0233	1.7E-08	8.8E-07
22	1250	5.9E-09	4.3E-07	1336	2.0E-06	1.5E-05	1403	4.5E-07	7.7E-06
23	0511	5.9E-09	4.2E-07	0523	9.3E-08	1.4E-06	0532	2.0E-08	8.7E-07
23	1445	3.6E-09	4.4E-07	1500	5.3E-08	2.1E-06	1510	3.4E-08	1.2E-06
23	1639	8.9E-09	4.8E-07	1702	1.8E-06	9.8E-06	1711	3.7E-07	4.7E-06
25	2141	9.7E-09	4.5E-07	2150	3.8E-08	1.1E-06	2207	1.6E-08	7.9E-07
28	1142	1.4E-09	2.4E-07	1148	8.6E-08	1.3E-06	1153	1.8E-08	7.5E-07
29	1041	5.9E-08	1.3E-06	1058	2.4E-07	4.3E-06	1119	1.0E-07	2.8E-06

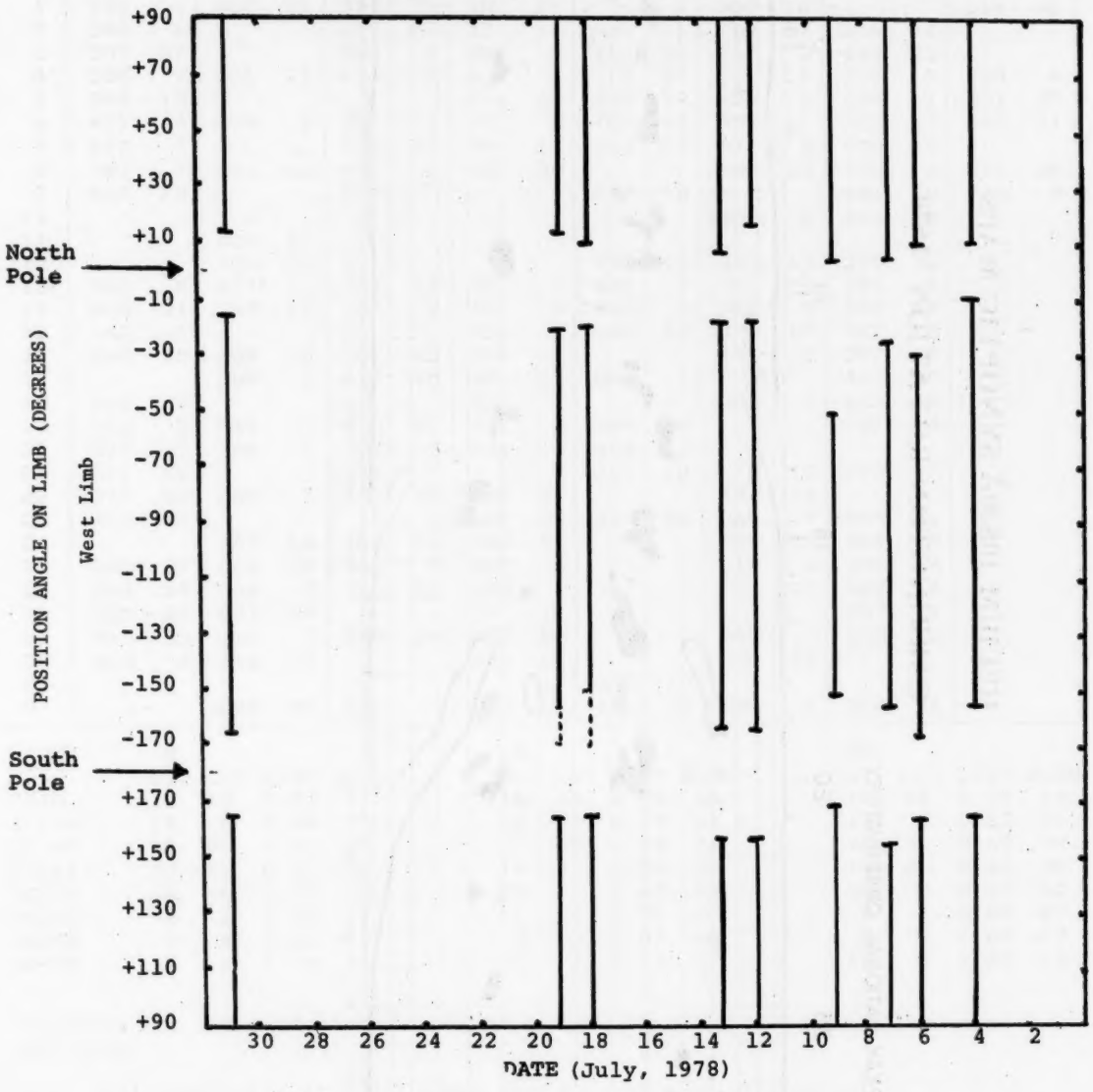
CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

JULY 1978

Big Bear Solar Observatory

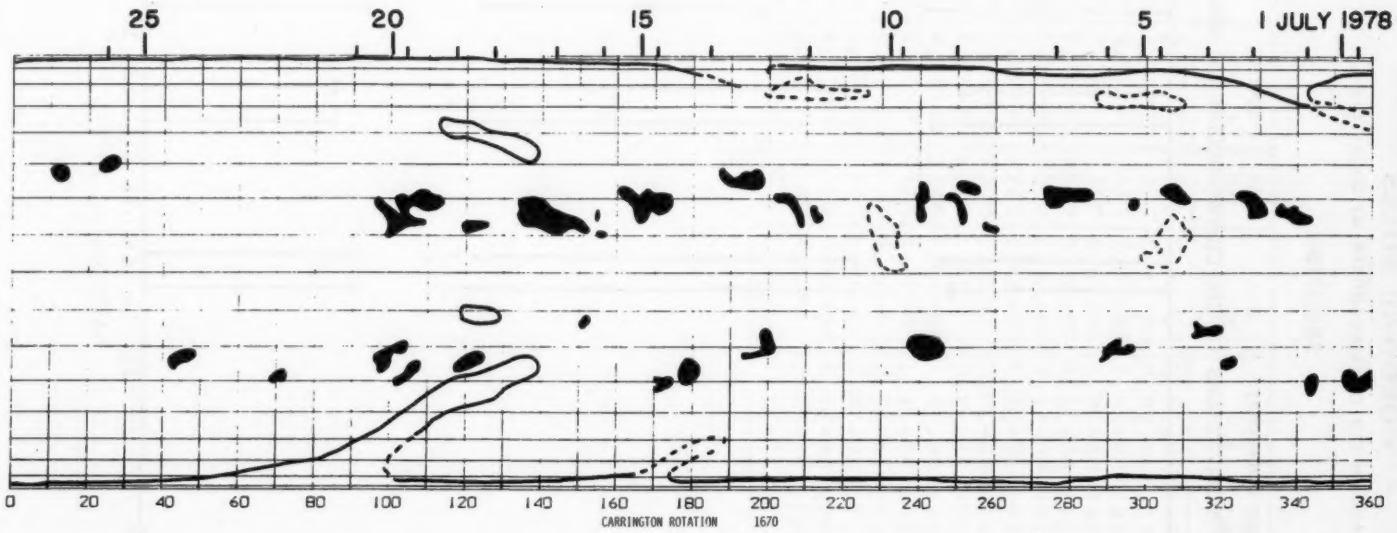
OBSERVATIONS OF D3 CHROMOSPHERE AT SOLAR LIMB



HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1670

KITT PEAK NATIONAL OBSERVATORY



SOLAR WIND

Interplanetary Scintillations

JULY 1978

DAY	3C48 VEL	ERR	3C144 VEL	ERR	3C147 VEL	ERR	3C161 VEL	ERR	3C237 VEL	ERR	3C273 VEL	ERR	3C298 VEL	ERR	3C459 VEL	ERR
1	456	6	430	26	371	36	392	59			389	12			514	65
2	340	6			479	58	337	11	464	31	330	57	306	44		
3	359	37			328	4	334	5	412	22	367	8	433	23		
4	358	7	306	25	444	9	400	5	412	69	449	4	495	3	520	4
5	369	13					416	42	335	49	426	6	458	11	331	37
6	477	4	298	5	417	33	391	5	400	10	353	41	293	33	443	11
7	415	7			557	41	394	14	363	29	477	5	458	10		
8	487	7	516	116	491	7	426	38			439	22	458	6	211	36
9	437	10							279	13			451	20	446	7
10											381	6	366	38		
11			518	52												
12			450	23					536	15	361	69	370	58		
13	424	5	471	16	469	45	391	6	433	9	451	8	451	4		
14	438	21	365	11	443	9	451	8	402	6	561	8	557	14		
15	642	*					334	*	349	29	472	19	467	5		
16	358	15	333	12	367	23	376	31			447	15	377	26		
17			309	6	415	40	351	29	278	6			467	39		
18	404	9					338	*			387	4	463	19		
19	413	5	349	6	418	27	391	5	289	9			437	14		
20	370	7	354	8	329	9	421	6	460	15						
21	371	65			314	*			307	12	318	15	295	17		
22	373	33	360	7	408	48	430	81			433	12				
23	420	30					362	30	317	56	369	7	404	41		
24			357	14	483	53	383	11			335	23	324	4		
25	458	19	455	18	300	7	369	5			310	8	339	14		
26	244	34	366	9	323	22	422	*			344	20	289	4		
27	351	27	277	27									257	7		
28	365	53	269	7	229	24	478	24			245	10	283	5		
29	283	3	312	14			332	66			230	29				
30									350	10						
31			253	82			336	11	500	95	254	9	274	6		

JULY 5				15				25			
	UT	LAT	DIST	DLON	UT	LAT	DIST	DLON	UT	LAT	DIST	DLON
3C48	15.	12.	0.94	17.	14.	12.	0.99	16.	13.	12.	1.04	15.
3C144	19.	3.	0.34	70.	18.	4.	0.49	61.	17.	5.	0.63	51.
3C147	18.	53.	0.52	37.	17.	43.	0.60	41.	16.	34.	0.69	39.
3C161	20.	-52.	0.50	26.	19.	-41.	0.54	37.	19.	-31.	0.61	39.
3C237	24.	-5.	0.73	-42.	23.	-6.	0.61	-51.	22.	-8.	0.47	-60.
3C273	2.	2.	1.00	-17.	1.	4.	0.95	-18.	0.	4.	0.89	-27.
3C298	4.	6.	1.12	-15.	3.	8.	1.07	-16.	2.	9.	1.03	-17.
3C459	12.	6.	1.15	14.	11.	7.	1.19	12.	11.	8.	1.22	10.

*Indicates data for which no error estimate is available since only two antennas were operating.

Note: 3C237 observed at 24 hr. UT before July 8 and at 0 hr. UT after July 8.

INFERRED IP MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1966	MAY 13	TA	-	-		TA			TA											AT	- -	AT T*	- T*				AT AT	-
1967	JUN 9								TA		-			TA						AT A*					AT *	A*		TA TA
1968	JUL 6										A*			T*	TA	TA		T*			AT			-	AT		-	
1969	AUG 2		TA						TA	-			TA	*								AT	TA					
1970	AUG 29			-	-	-		TA										AT	AT			AT	TA	TA -	AT	AT		
1971	SEP 25						-	-	-	-	-	-					TA				TA							
1972	OCT 22					-	AT														AT AT					*		
1973	NOV 18			TA	AT						-		AT							*			*		*			
1974	DEC 15				-	-	-		AT -		AT				AT	AT		AT		TA		TA		TA			*	
1975	1978 JAN 11		*	*					*		*	*						*			TA	-	AT			-		-
1976	FEB 7						*	TA				-			-						-		*			TA	A*	TA
1977	MAR 6	TA		-					AT			T*	*					TA			AT AT		AT	AT	*	TA		
1978	APR 2							*	-		AT											AT AT						
1979	APR 29		TA		*		TA	AT AT	TA		-	-	T*							TA TA			AT					
1980	MAY 26				TA		AT	AT				-				AT	TA				-					-	-	-
1981	JUN 22	TA					A*					-	TA	TA TA		AT			*				*	AT	AT -		AT	
1982	JUL 19									TA																		

▨ = definitely towards the sun □ = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.
Note: The Bartels Rotation numbers after Rotation number 1955 were incorrect in this Table in SGD issues 385 Part I through 389 Part I.
Errata: Thule data for December 5, 6, 10, 11, 12 and 19, 1976 have been corrected.

STANFORD MEAN SOLAR MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1966	MAY 8																											
1967	JUN 4																											
1968	JUL 1																											
1969	JUL 28																											
1970	AUG 24																											
1971	SEP 20																											
1972	OCT 17																											
1973	NOV 13																											
1974	DEC 10																											
1975	1978 JAN 6																											
1976	FEB 2																											
1977	MAR 1																											
1978	MAR 28																											
1979	APR 24																											
1980	MAY 21																											
1981	JUN 17																											
1982	JUL 14																											

POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

Note: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the sun which affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1977					1978						
	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY
DAY												
01	-16	-9	9	6	-14	.	16	.	52	-12	-28	1
02	-23	-13	6	1	-10	.	31	22	46	-34	-22	13
03	-25	.	3	-14	-7	14	26	12	43	-27	-12	15
04	-23	3	13	-16	8	31	.	.	13	-27	-5	18
05	-16	12	13	-11	26	.	-5	8	4	-29	6	24
06	-5	18	11	-1	46	27	4	11	-15	-27	5	43
07	-1	22	-6	11	55	15	9	4	-32	-23	21	42
08	11	17	-13	31	53	.	.	.	-53	-12	33	36
09	25	8	-13	46	46	-1	.	-31	-52	3	41	16
10	20	4	-4	48	26	11	-28	.	-41	24	40	-11
11	17	6	2	51	.	0	-43	-70	-32	41	23	-17
12	12	13	12	32	-2	.	.	-78	-4	50	12	-12
13	11	19	28	14	10	.	-41	-56	22	47	8	-38
14	5	23	35	-4	.	.	-23	-49	.	30	0	.
15	7	40	46	-10	1	.	3	-28	.	16	-24	.
16	.	.	39	-18	-6	0	.	-3	58	5	-38	.
17	5	38	20	-24	.	-3	31	18	37	1	.	.
18	13	41	6	-5	6	.	22	54	11	-29	.	.
19	19	31	6	-11	8	.	37	48	-9	-49	.	.
20	23	17	1	-12	.	18	22	24	-30	-75	-16	23
21	24	2	3	.	.	39	-1	.	-49	-79	0	21
22	22	-3	7	-7	.	10	-18	-23	-50	-59	24	16
23	18	-2	3	-4	-5	-4	-49	-49	-62	-37	51	6
24	8	-6	-3	0	-1	-15	.	-69	.	-21	52	3
25	4	-1	-9	2	.	-17	.	-79	-13	-9	48	3
26	0	-3	-5	4	.	-36	.	-73	10	1	30	-7
27	2	-8	-5	7	.	-48	-34	-53	13	27	12	-13
28	-2	.	-6	5	.	-33	.	-28	6	14	3	-6
29	-6	-8	5	-2	-9	-15		.	13	-10	-5	14
30	-6	3	6	-11	.	14		.	18	-20	-10	27
31	-11		8		-20	10		.		-27		33

Dot symbol entry indicates no data available for the day.

PIONEER IX

JULY 1978

Date July 1978	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1]				IP E-FIELD[2]	IMF[3]		COSMIC RAY PROTONS[4] (particles/sec)	
				U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (days)	400 Hz (mv)	|B| (γ)	φ (°)	>13.9 Mev	>40 Mev
9	2011-2229	2000	-080.2	325.			-5.57	0.12	5.8	189.	5.7	0.76
		2100		338.				.14	5.9	154.	5.8	.65
		2200		350.				.14	6.6	094.	5.7	.75

[1] Wolfe - NASA/ARC
[2] Scarf - TRW, Inc.
[3] Sonett and Colburn - NASA/ARC
[4] Webber - Univ. of N.H.

ESP = Earth-Sun Probe Angle.

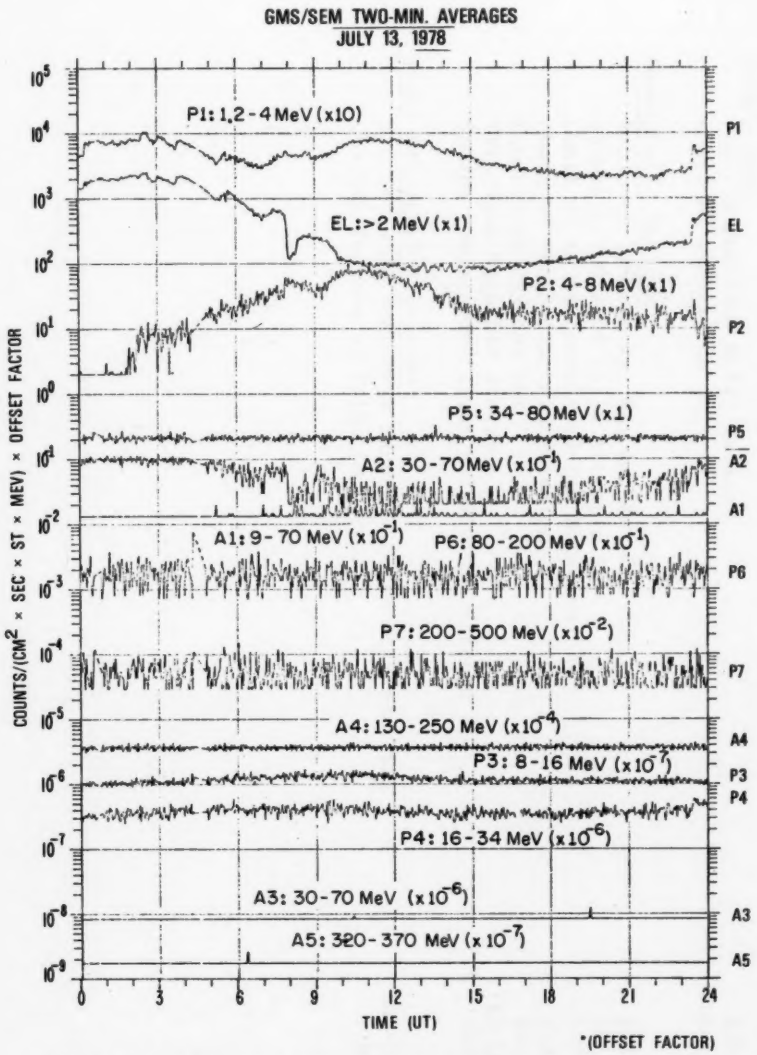
Note: Data sampled hourly unless otherwise noted.

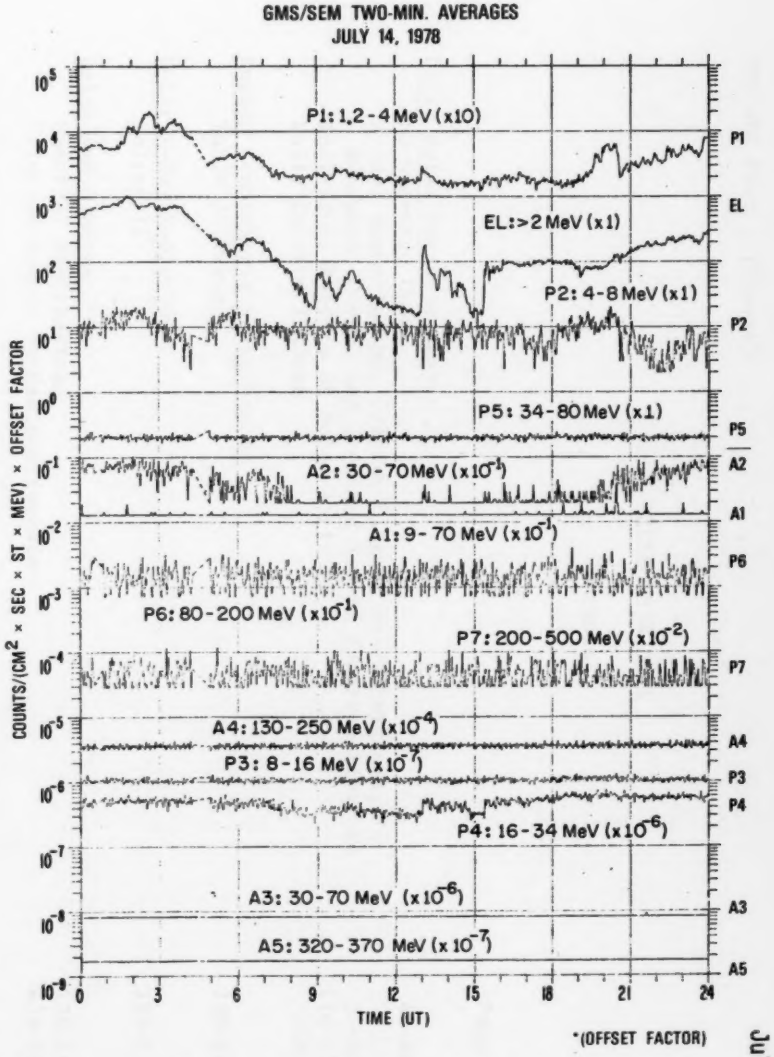
Dot symbol entry indicates no data available for the day.

BOULDER GEOMAGNETIC SUBSTORM LOG

JULY 1978

DATE	TIME OF ONSET	DIRECTION	COMMENTS
1			Quiet day; mild activity at Fort Churchill and east-west chains 0900-1500 UT.
2	0715	East	
3	2250		SSC - Mag storm begins
4			Mag storm continues- Very strong response throughout network 1335-1755 UT.
5			Mag storm continues through 1600 UT - Strong responses throughout network 0330-0820 UT.
6	1510		Network in daylight
7	0840	West	Field continues disturbed through 2140 UT with no distinct onset
8	0540		Minor SS activity along auroral oval
	0625		Minor SS activity along auroral oval
	0645		Minor SS activity along auroral oval
	0710		Minor SS activity along auroral oval
	1445	West	Moderately strong response Fort Simpson to College, also Boulder and Tucson at mid-latitude and Pelly Bay and Rankin inlet on Ft. Churchill chain.
9	1300		Minor SS centered near Norman Wells
	1505		Network in daylight
10	0800	East	SS centered Lynn Lake - Island Lake
	1205		SS along oval stations; Lynn Lake - College
11			Unsettled periods; no distinct onset
12	1020		SS along oval stations; Lynn Lake - Norman Wells - Inuvik
13	0015		Weak SSC
	0750	Near Center	
	1310		1st of multiple onset
	1410		2nd of multiple onset
	1500		3rd of multiple onset
	2325		Moderate SSC seen throughout network
14			Mag storm
15			Quiet - 20 gamma pulsation at mid-latitude chain 0400-0600 UT
16			Quiet day
17	0954	West	1st of double onset - centered near Fort Simpson
	1010	West	2nd of double onset - centered near Fort Simpson
18	1155	West	
	1550		Network in daylight
	2045		SS evident in network from Fort Smith eastward. Stations north of oval and mid - low latitude stations disturbed 12-24 UT.
19	0500	East	Moderate H-component response mid - low latitude. Minimal or no response in rest of network.
	0550	≈Center	Minimal or no response in rest of network
	0610	≈Center	Minimal or no response in rest of network
20	0620	East	SS centered near Lynn Lake - Back.
21	0820	West	
22	0410	East	1st of double onset
	0455	East	Moderate activity until 0800
23	0450	East	
24			Quiet day
25			Quiet day
26			Quiet day
27			Quiet day
28	0400	East	
	0620	East	
	0700	East	
29			Quiet day
30			Quiet day
31			Quiet day





ERRATA: In SGD 406 Part I, page 44, fourth paragraph, sixth line -- the P2 undisturbed counting rate of 80 counts/cm²·sec·sterad refers to unpublished February 1978 data. For each event the noise level is measured by the quiet day level before the event. For September 1977 and April 1978 data, the noise level was about 1 count/cm²·sec·sterad.

JUNE 1978 DATA

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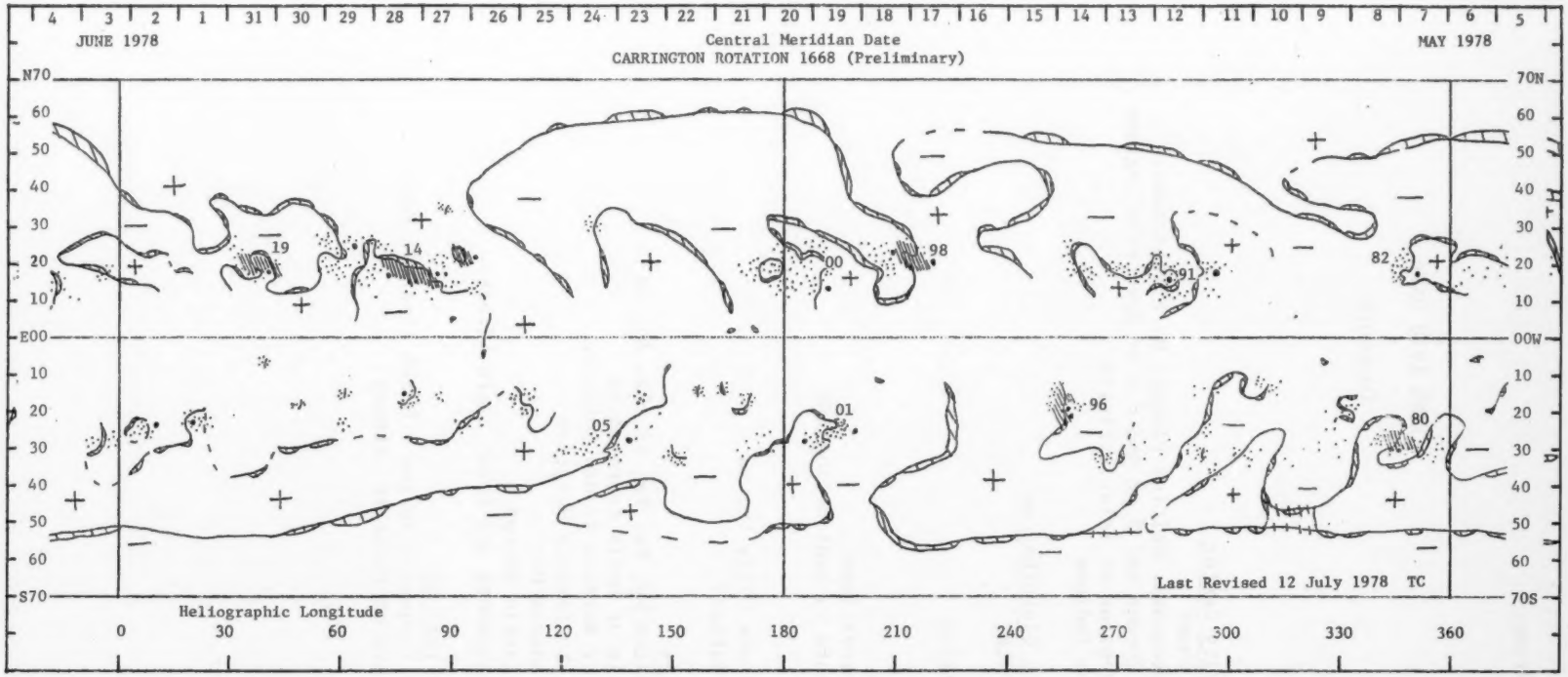
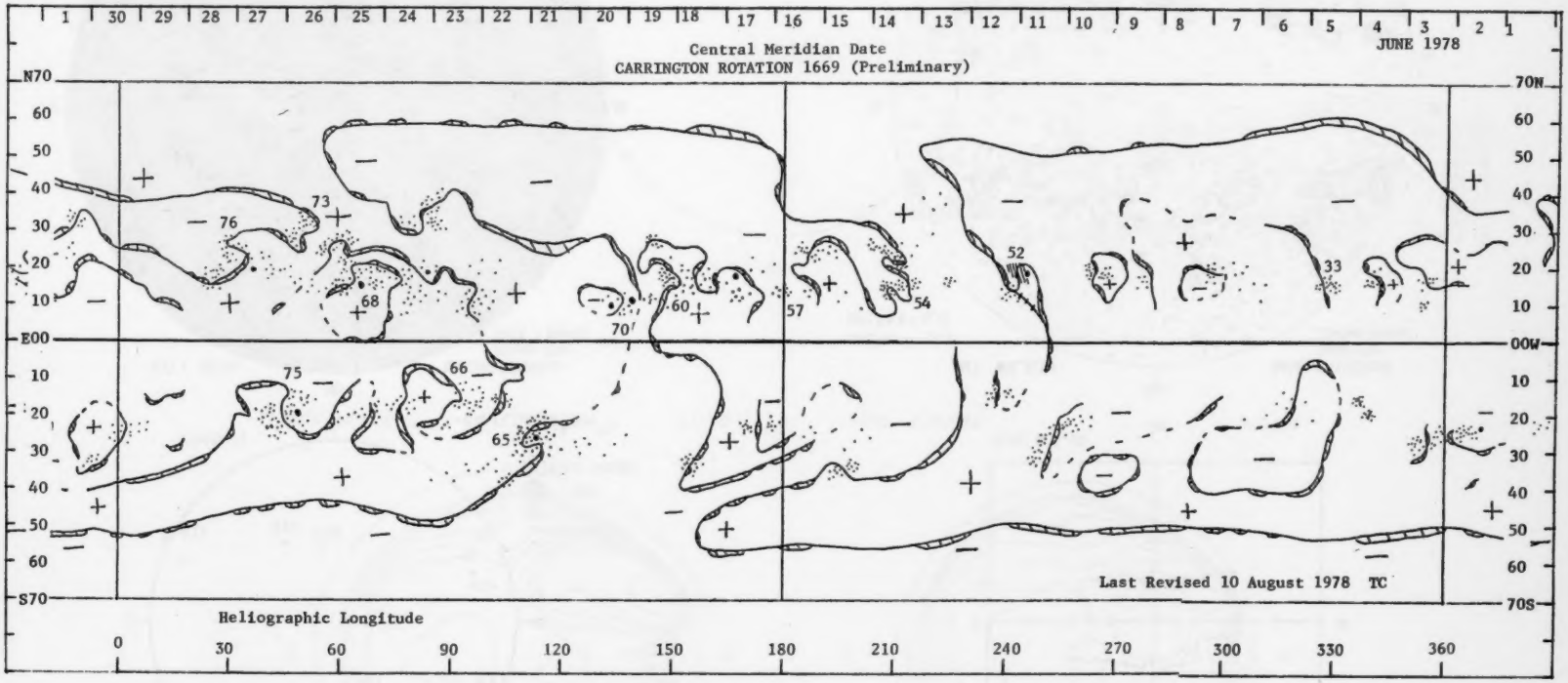
Hα SYNOPTIC CHART
MAY - JUNE 1978

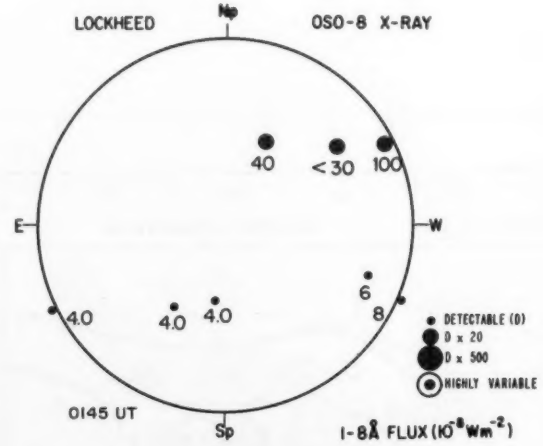


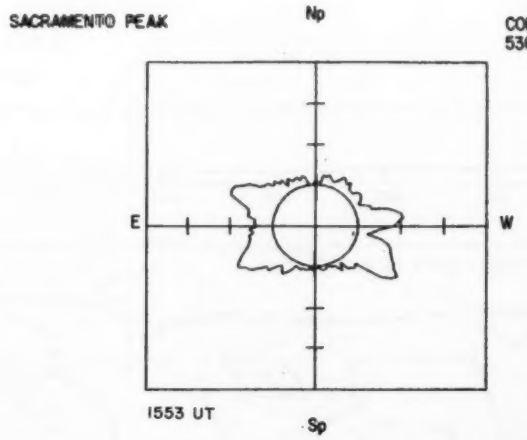
Hα SYNOPTIC CHART

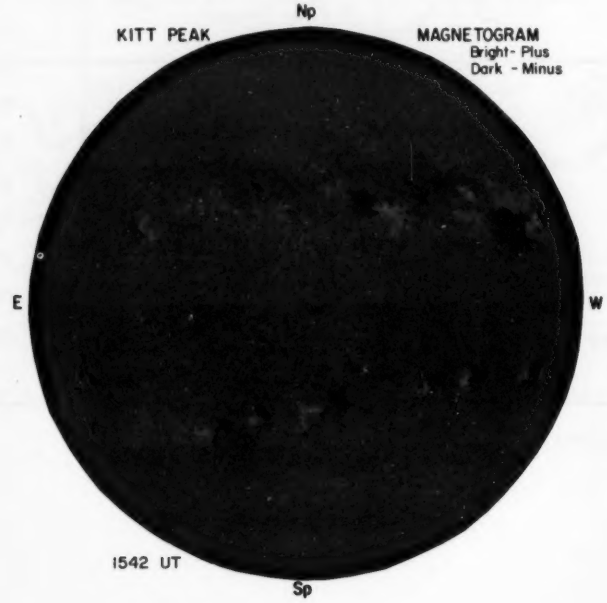
CARRINGTON ROTATION 1669 (PRELIMINARY)

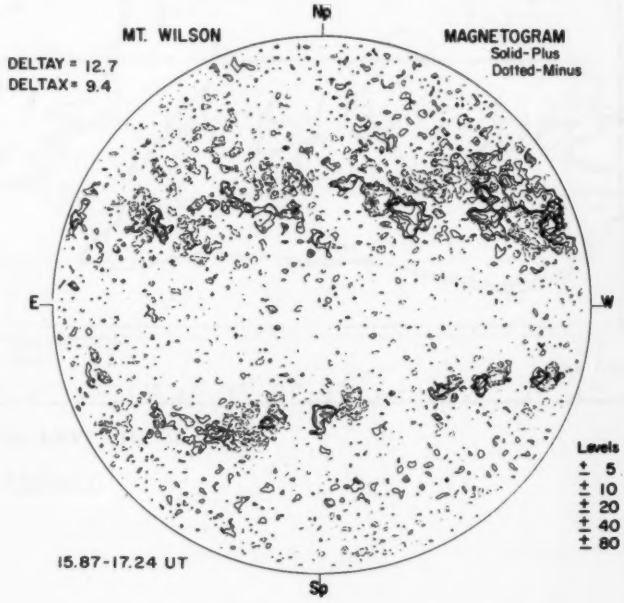


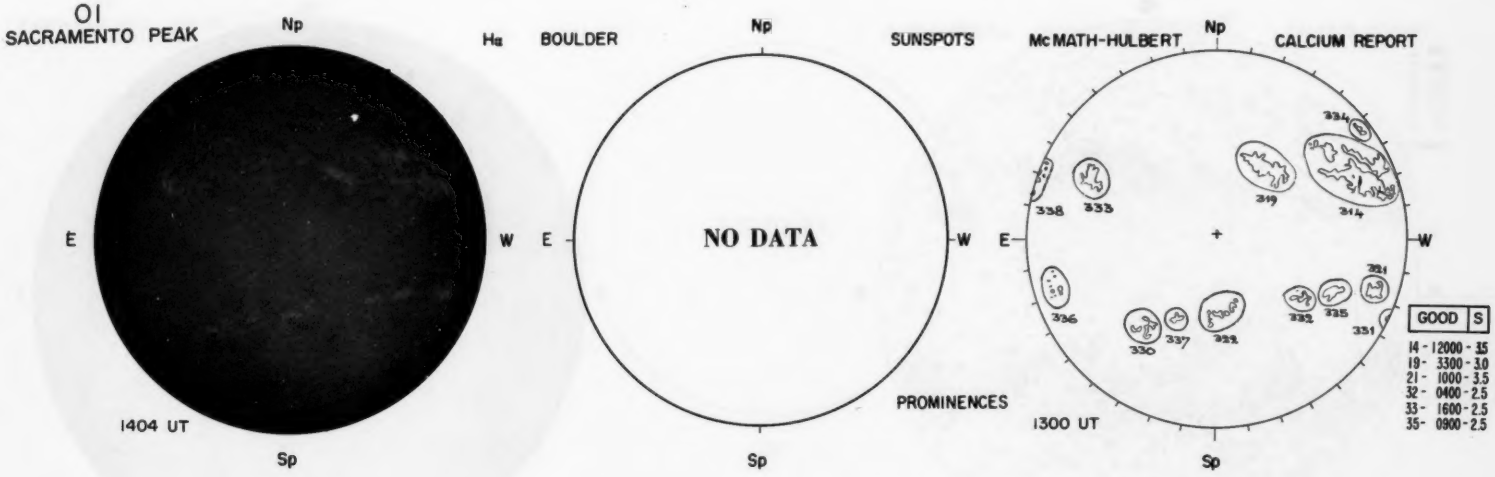
JUNE 1, 1978 (P = -15.59, B_o = -0.67, L_o = 28.63)

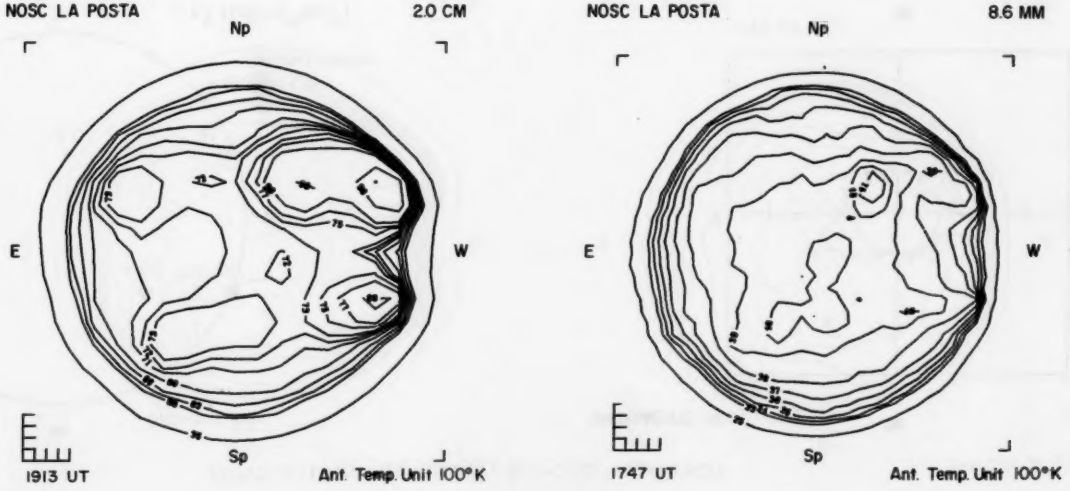






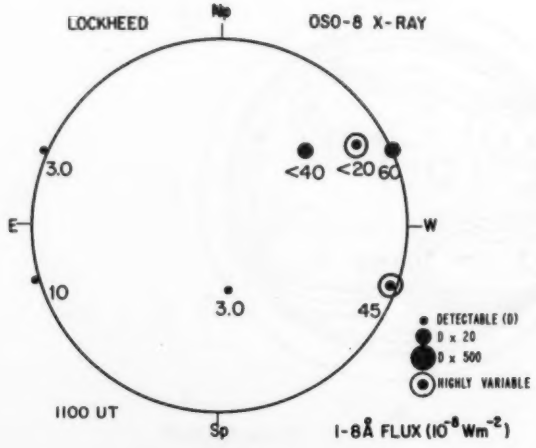



01
SACRAMENTO PEAK
Np
Hα
E
W
1404 UT
Sp
BOULDER
Np
SUNSPOTS
E
NO DATA
W
PROMINENCES
Sp
McMATH-HULBERT
Np
CALCIUM REPORT
E
W
1300 UT
Sp
GOOD | S
14 - 12000 - 3.5
19 - 3300 - 3.0
21 - 1000 - 3.5
32 - 0400 - 2.5
33 - 1600 - 2.5
35 - 0900 - 2.5


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1913 UT
Ant. Temp. Unit 100°K
NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1747 UT
Ant. Temp. Unit 100°K

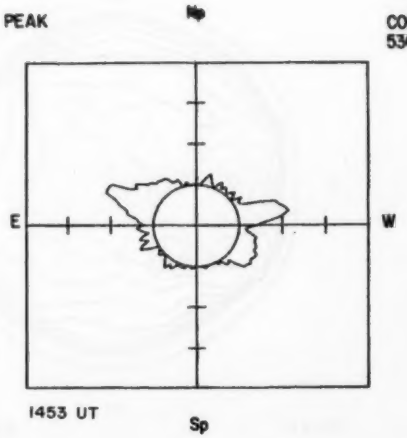
JUNE 2, 1978 (P = -15.22, B_o = -0.55, L_o = 15.40)

LOCKHEED OSO-8 X-RAY



1-8Å FLUX (10^{-8} Wm^{-2})

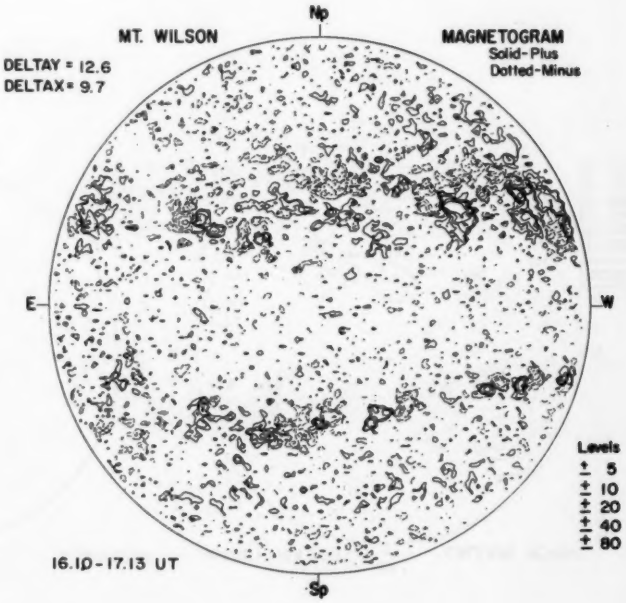
SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK MAGNETOGRAM Bright - Plus Dark - Minus

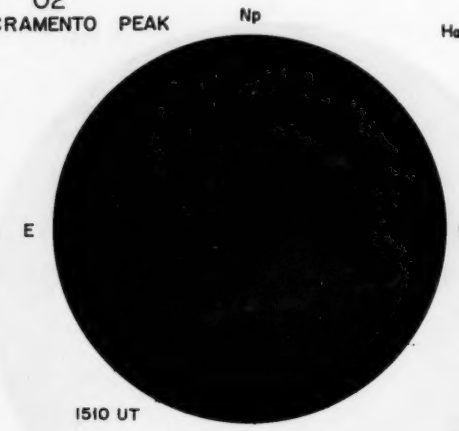
MT. WILSON MAGNETOGRAM Solid - Plus Dotted - Minus

DELTAY = 12.6
DELTAX = 9.7

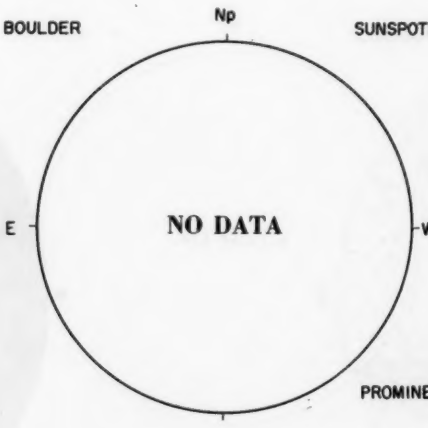


02

SACRAMENTO PEAK



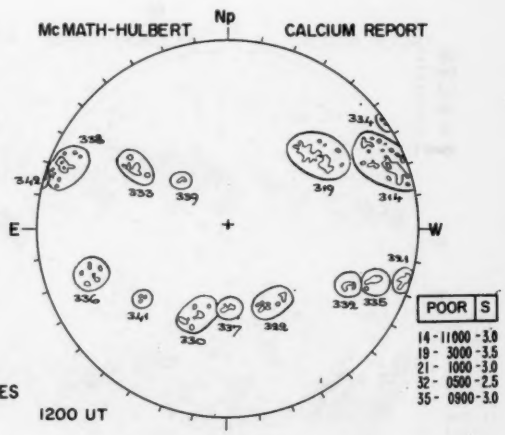
Hα BOULDER



SUNSPOTS

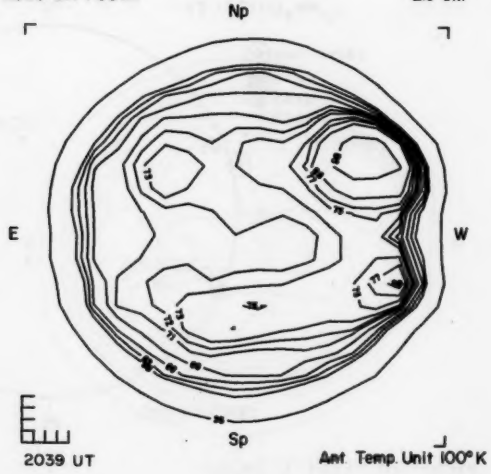
McMATH-HULBERT

CALCIUM REPORT

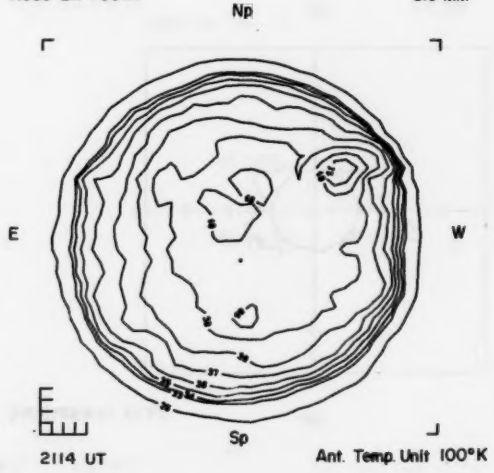


PROMINENCES

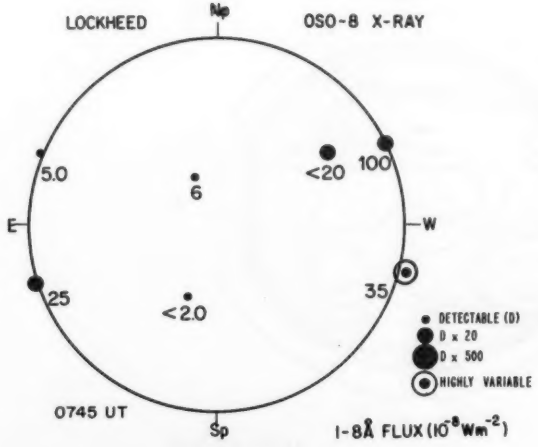
NOSC LA POSTA 2.0 CM

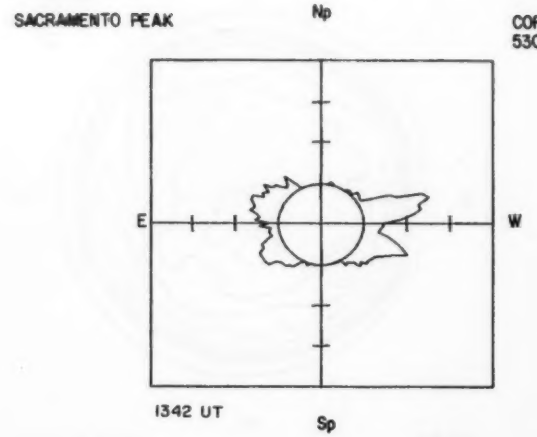


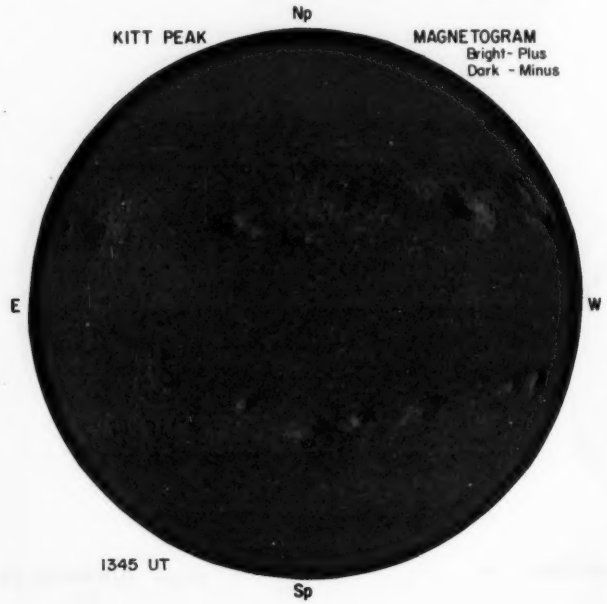
NOSC LA POSTA 8.6 MM

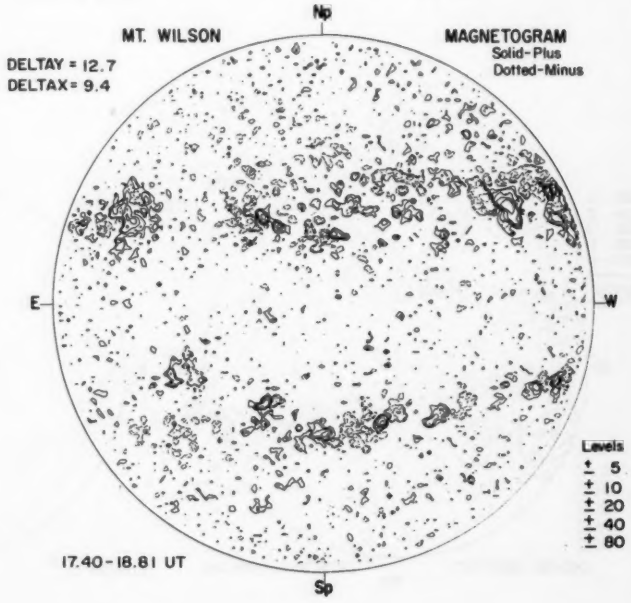


JUNE 3, 1978 (P = -14.84, B_0 = -0.43, L_0 = 2.16)

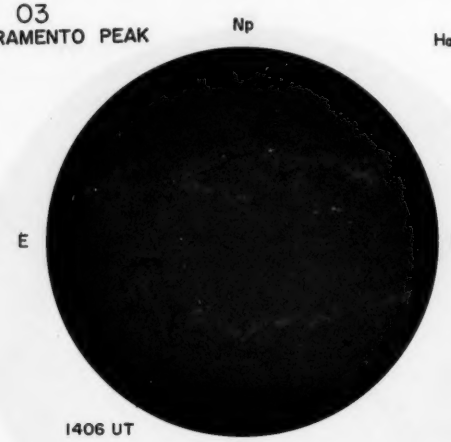






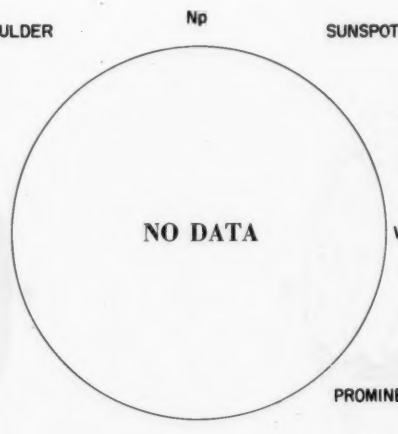


03
SACRAMENTO PEAK



1406 UT

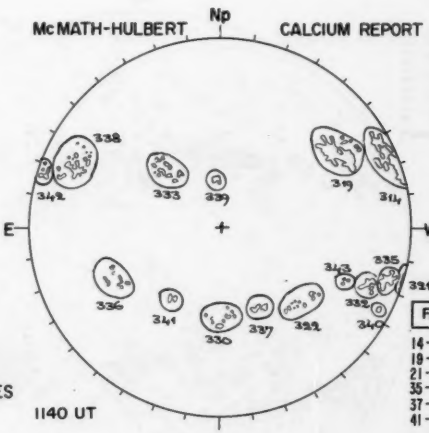
Hα BOULDER



SUNSPOTS

PROMINENCES

McMATH-HULBERT



1140 UT

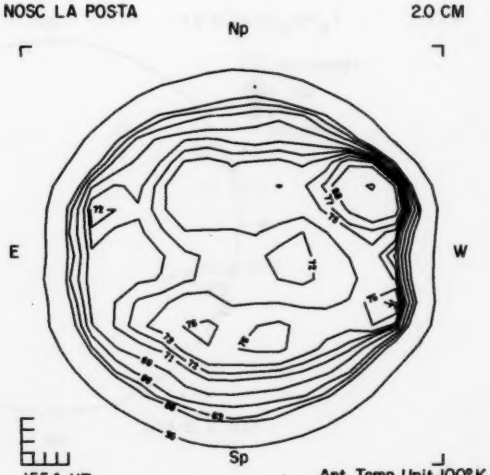
CALCIUM REPORT

FAIR	M

14- 9000 -3.0
18- 3200 -3.5
21- 0600 -3.0
35- 1500 -3.0
37- 0400 -2.5
41- 0300 -2.5

NOSC LA POSTA

2.0 CM



1554 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

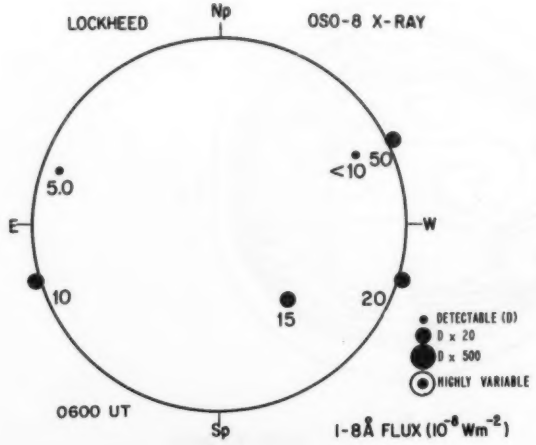
8.6 MM

---- UT

Ant. Temp. Unit 100°K

JUNE 4, 1978 (P = -14.46, B_0 = -0.31, L_0 = 348.93)

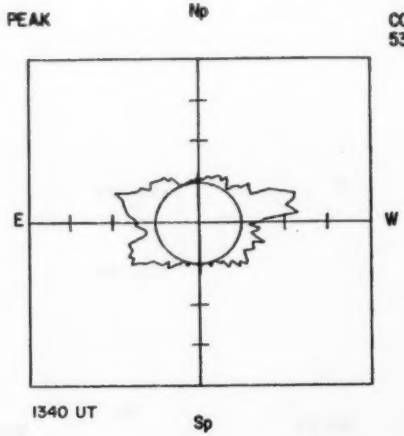
LOCKHEED OSO-8 X-RAY



0600 UT

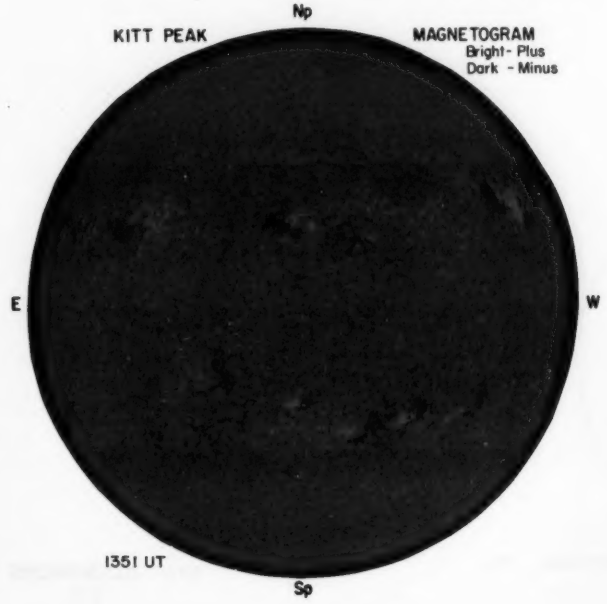
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



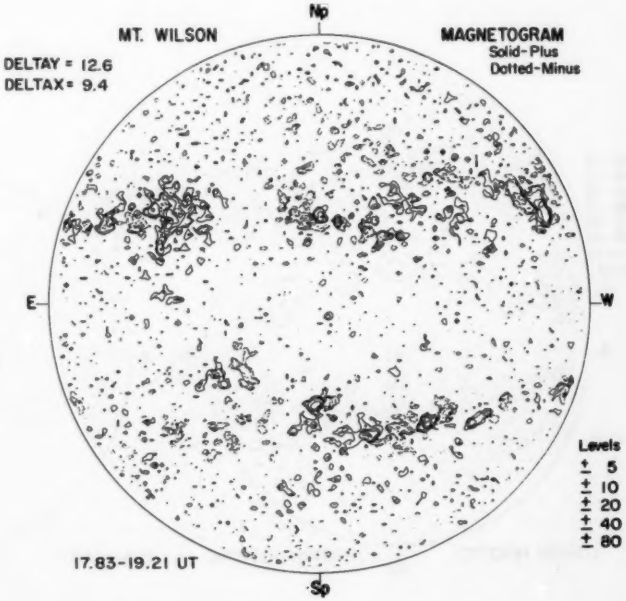
1340 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1351 UT

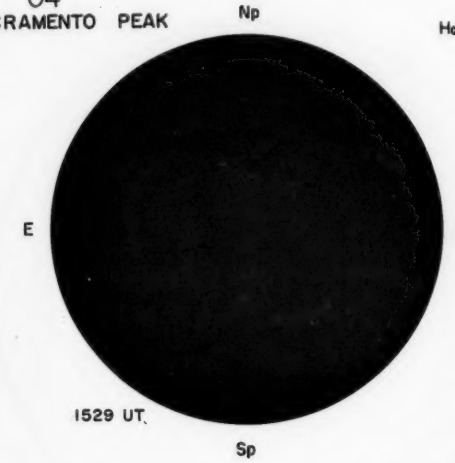
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.4



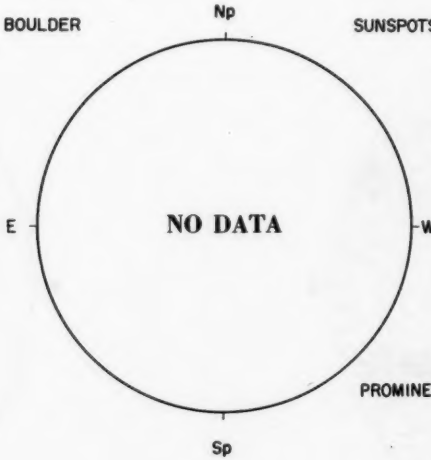
17.83-19.21 UT

04

SACRAMENTO PEAK

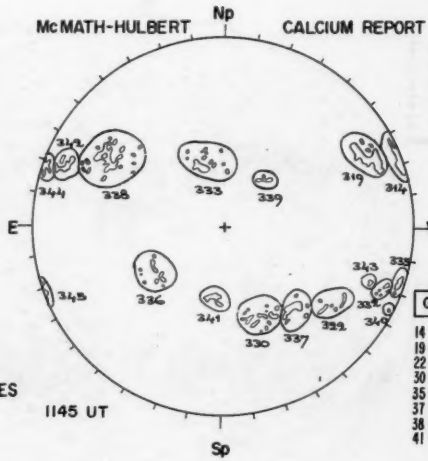


Hα BOULDER



SUNSPOTS

McMATH-HULBERT

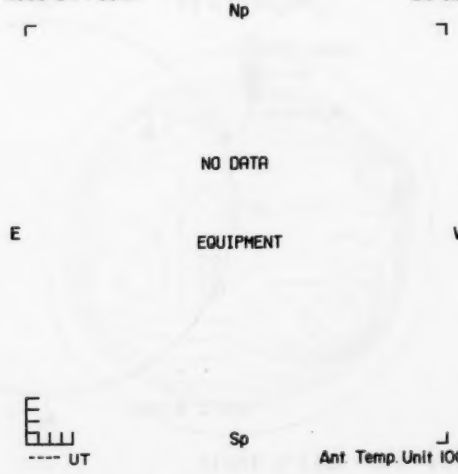


CALCIUM REPORT

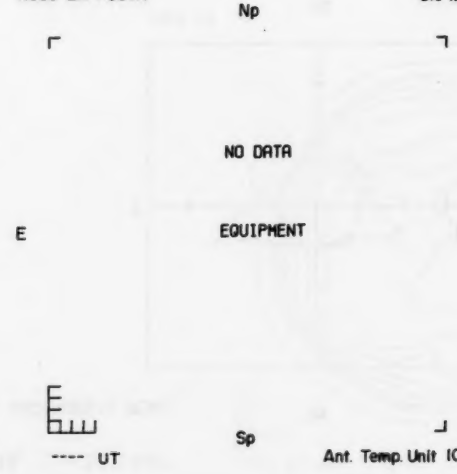
GOOD	S
14 - 6000 - 2.5	
19 - 3500 - 3.5	
22 - 0600 - 2.5	
30 - 1000 - 2.5	
35 - 1500 - 3.0	
37 - 0700 - 3.0	
38 - 1700 - 2.5	
41 - 0500 - 3.0	

PROMINENCES

NOSC LA POSTA

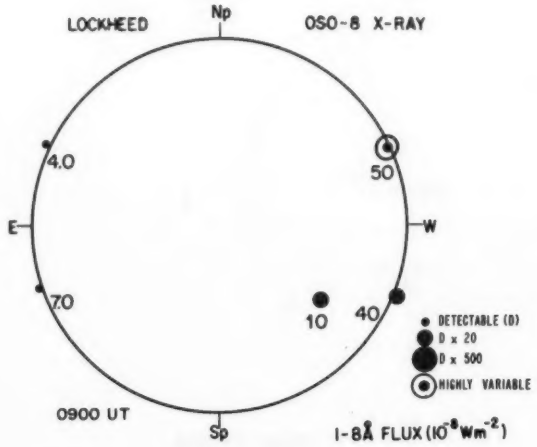


NOSC LA POSTA



JUNE 5, 1978 (P = -14.07, B_o = -0.19, L_o = 335.69)

LOCKHEED OSO-8 X-RAY

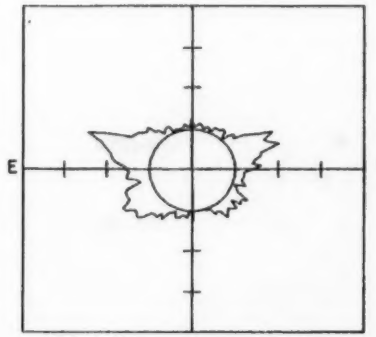


0900 UT

1-8Å FLUX (10^{-8} Wm^{-2})

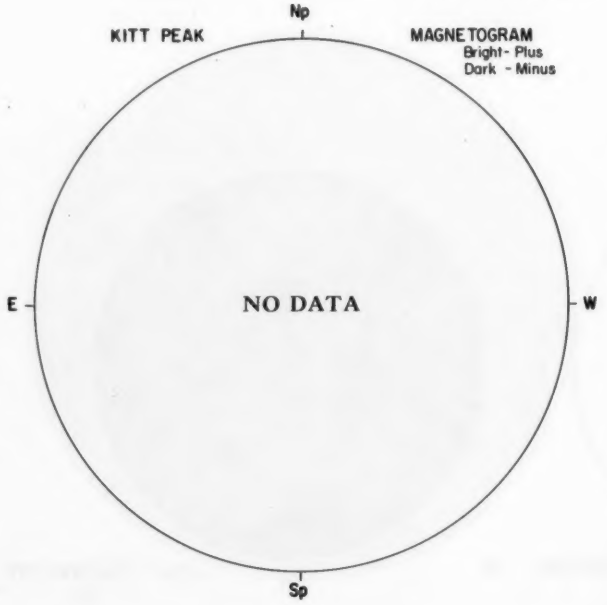
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



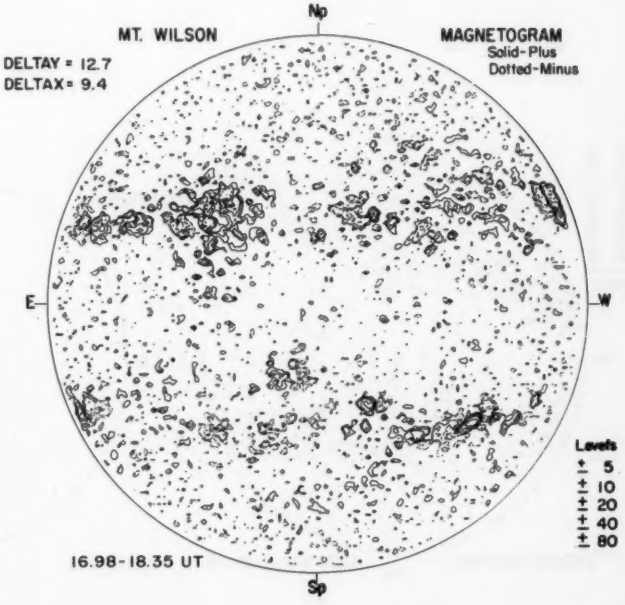
1358 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

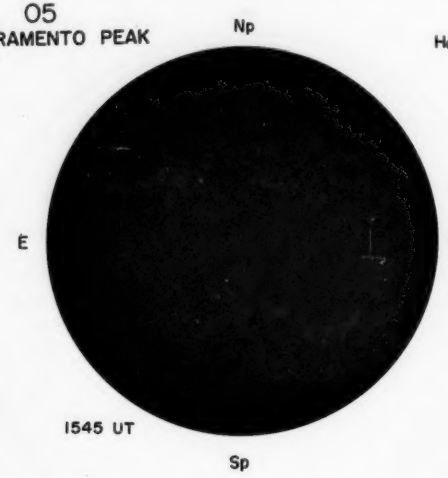
DELTAY = 12.7
DELTAX = 9.4



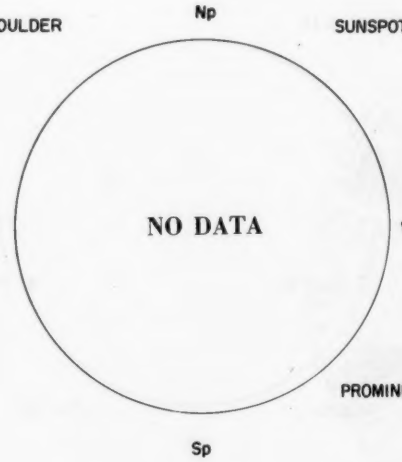
16.98 - 18.35 UT

05

SACRAMENTO PEAK

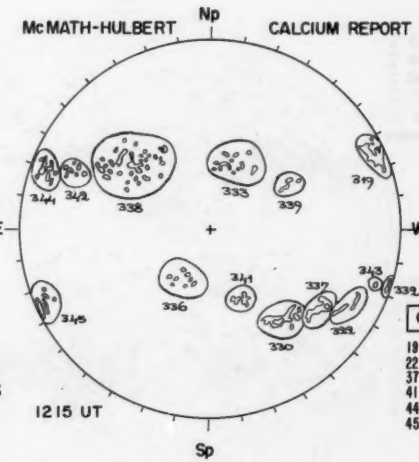


Hα BOULDER



SUNSPOTS

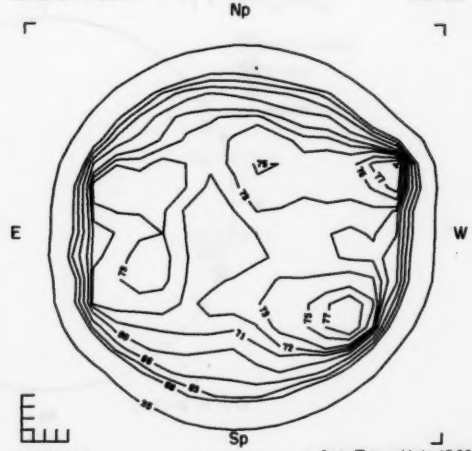
McMATH-HULBERT



PROMINENCES

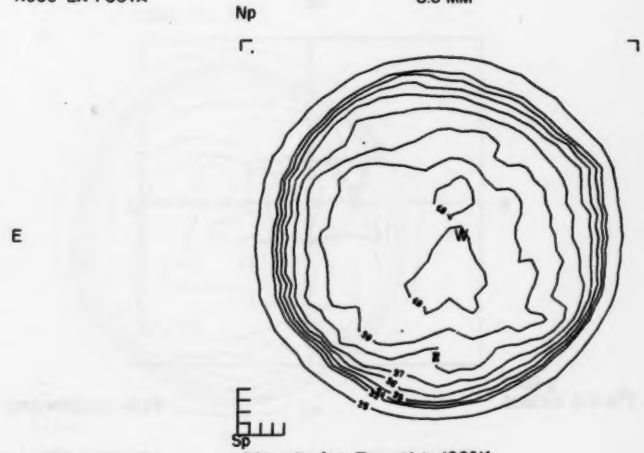
CALCIUM REPORT

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100°K

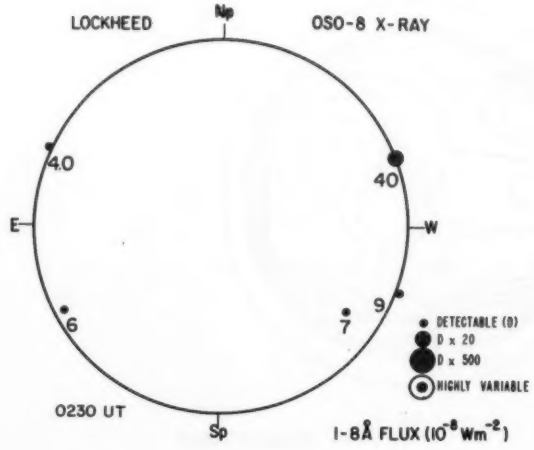
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100°K

JUNE 6, 1978 (P=-13.68, B_o=-0.06, L_o=322.46)

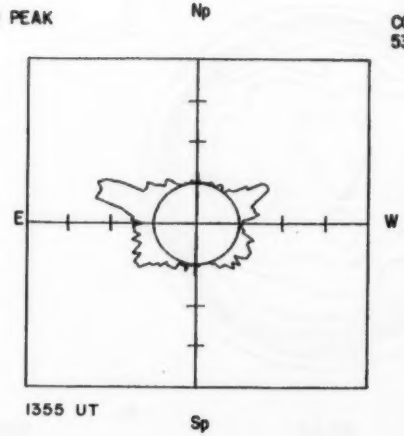
LOCKHEED OSO-8 X-RAY



0230 UT

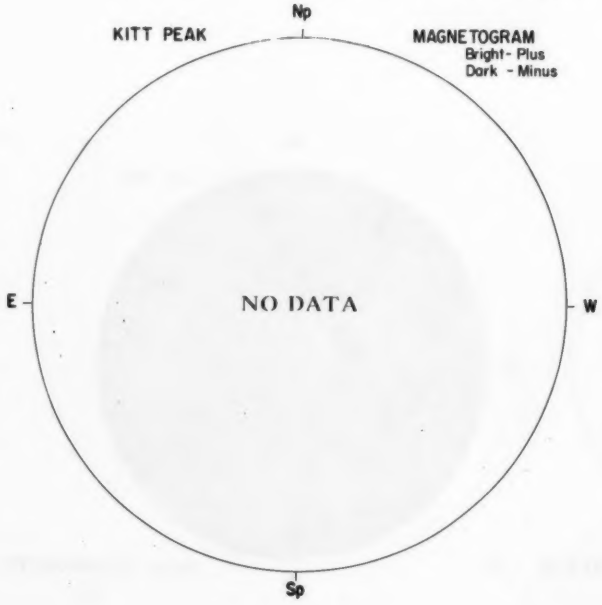
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

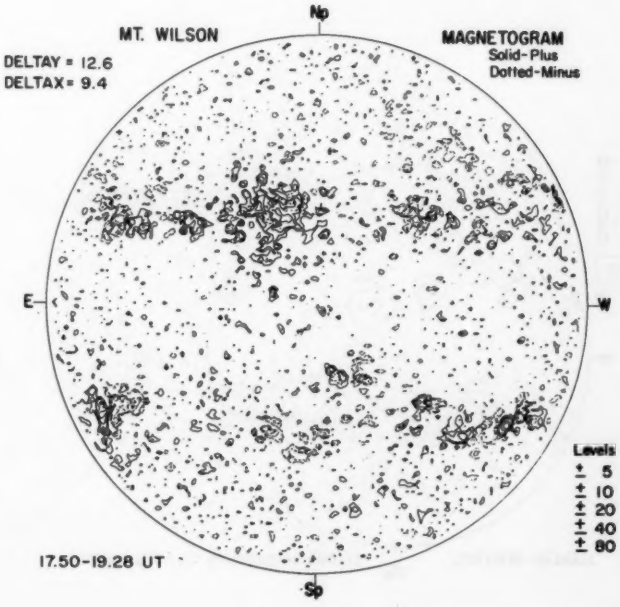


1355 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



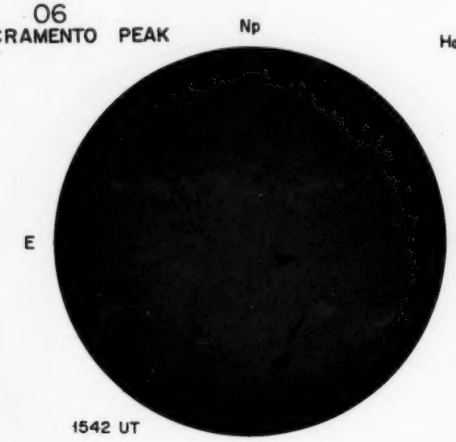
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.4



17.50-19.28 UT

06

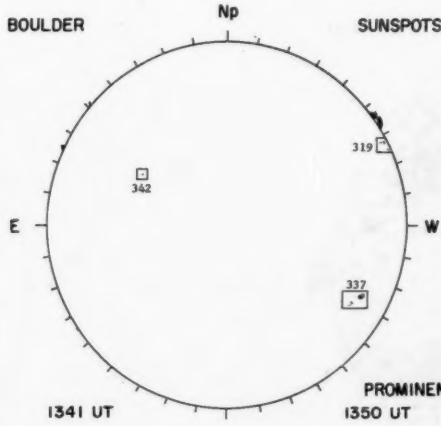
SACRAMENTO PEAK



1542 UT

Hα

BOULDER



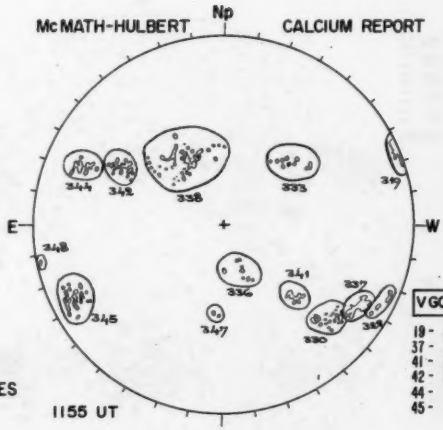
1341 UT

SUNSPOTS

PROMINENCES

1350 UT

McMATH-HULBERT



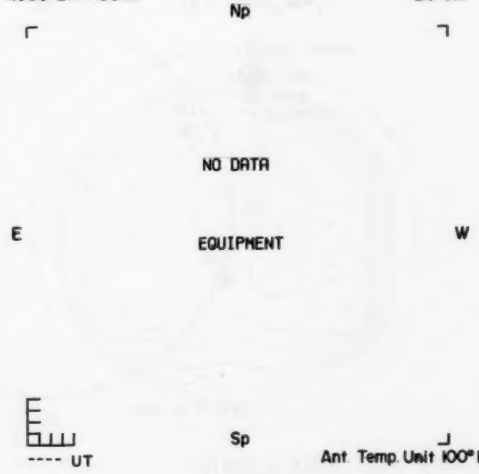
1155 UT

CALCIUM REPORT

VGOOD	S
19 - 2800 - 3.5	
37 - 1300 - 3.0	
41 - 0400 - 2.5	
42 - 0700 - 2.5	
44 - 1000 - 3.0	
45 - 1200 - 3.0	

NOSC LA POSTA

2.0 CM

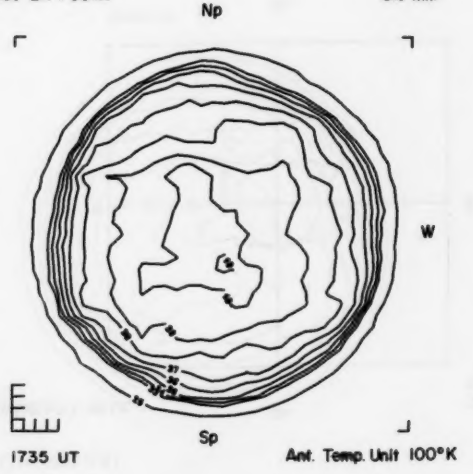


---- UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

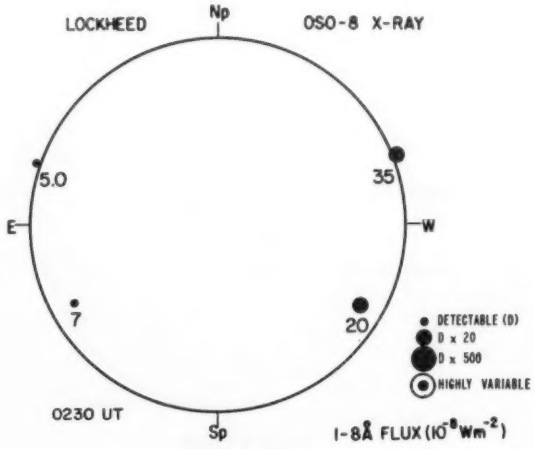
8.6 MM

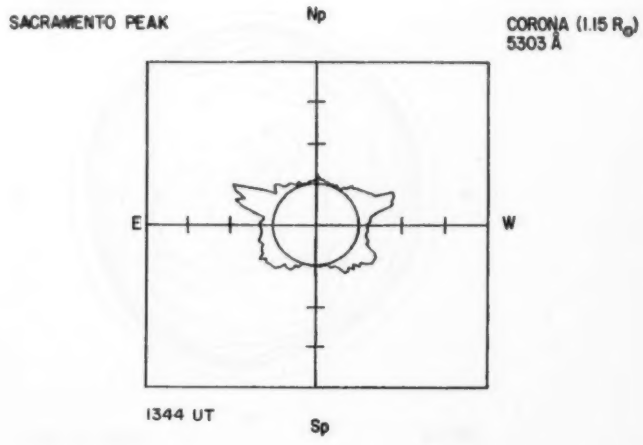


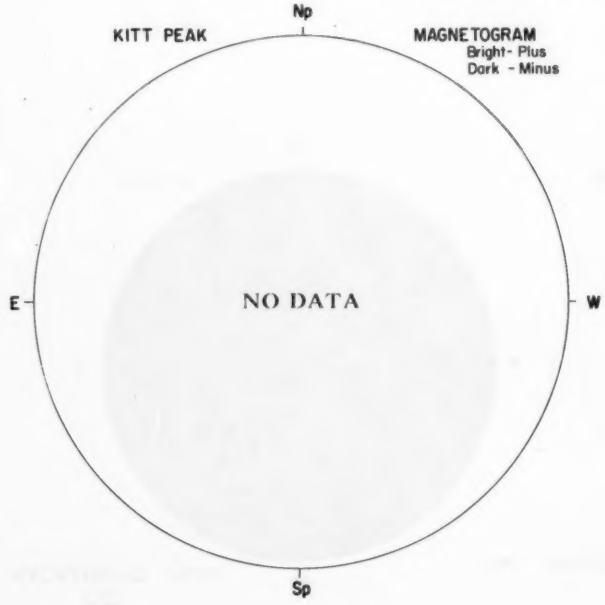
1735 UT

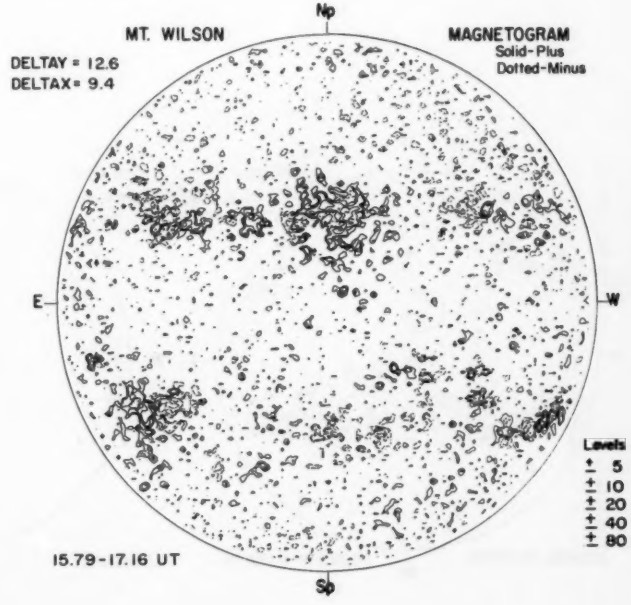
Ant. Temp. Unit 100°K

JUNE 7, 1978 (P = -13.28, B_o = 0.06, L_o = 309.23)



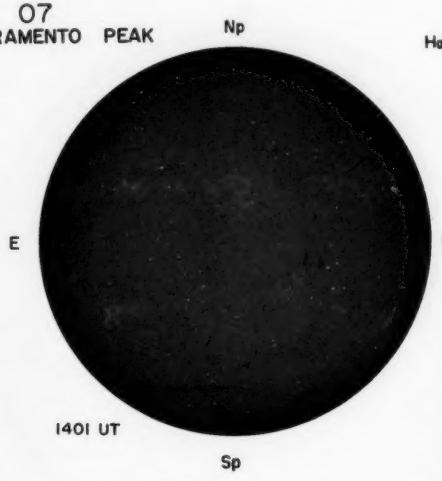






07

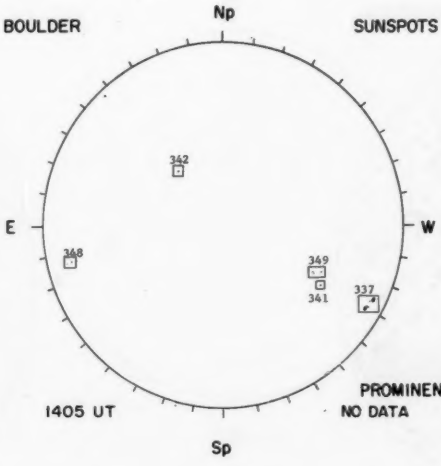
SACRAMENTO PEAK



1401 UT

Hα

BOULDER



1405 UT

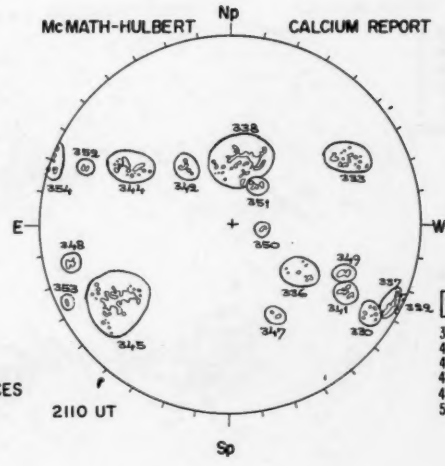
SUNSPOTS

PROMINENCES

NO DATA

McMATH-HULBERT

CALCIUM REPORT

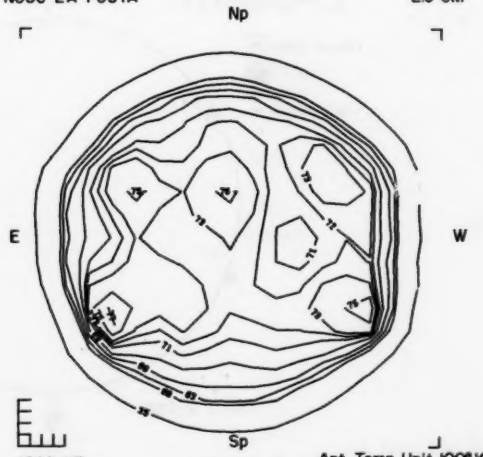


2110 UT

V GOOD	M
37 - 1300 - 3.5	
44 - 0800 - 3.0	
45 - 1800 - 3.0	
48 - 0500 - 2.5	
49 - 0300 - 2.5	
51 - 0300 - 2.5	

NOSC LA POSTA

2.0 CM

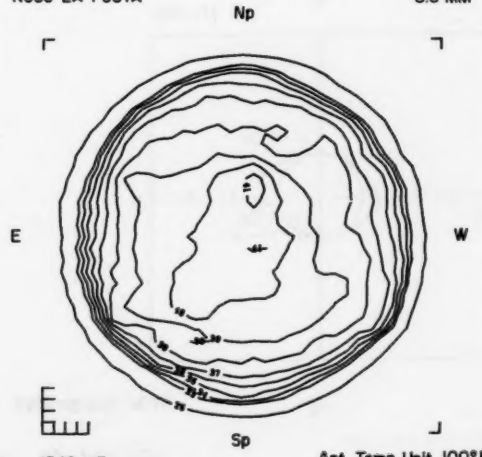


1522 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM

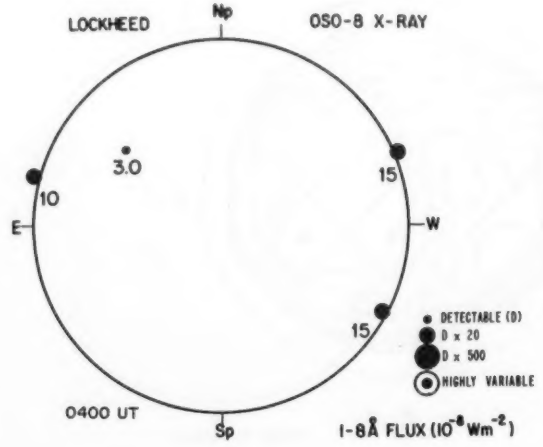


1549 UT

Ant. Temp. Unit 100°K

JUNE 8, 1978 (P=-12.88, B_0=0.18, L_0=295.99)

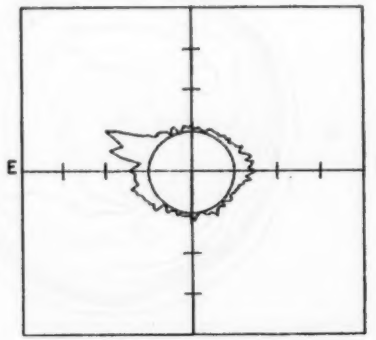
LOCKHEED OSO-8 X-RAY



0400 UT

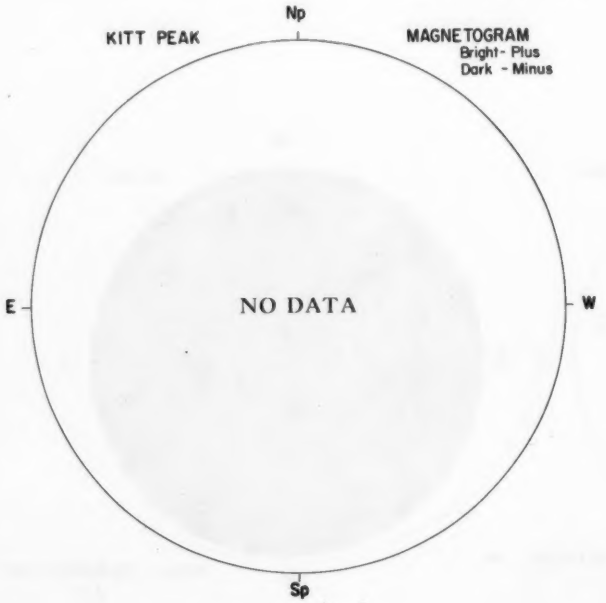
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å

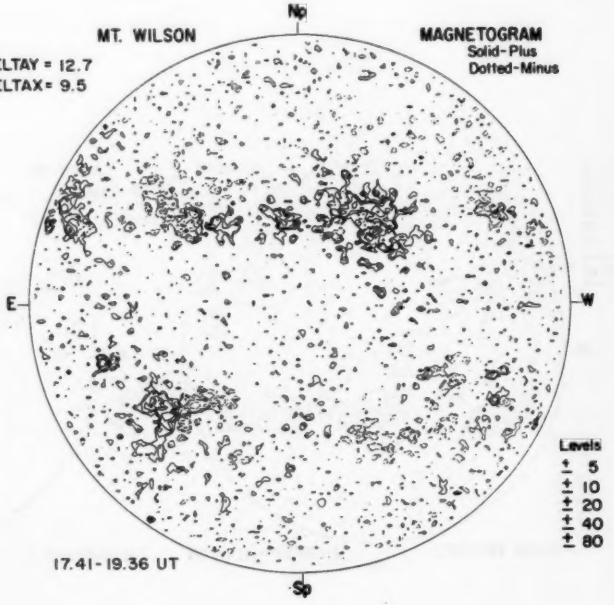


1339 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



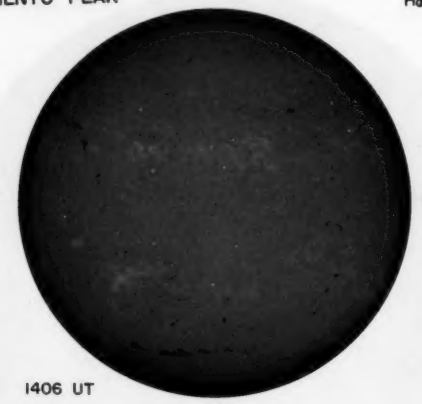
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.7
DELTAX = 9.5



17.41 - 19.36 UT

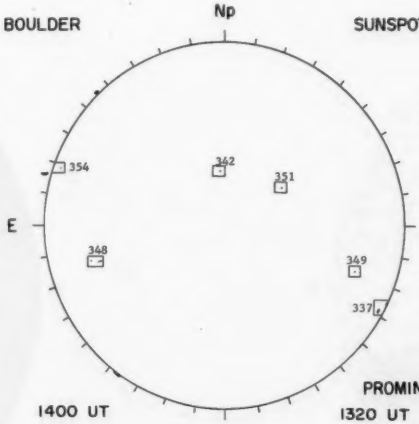
08

SACRAMENTO PEAK



1406 UT

Hα BOULDER



1400 UT

SUNSPOTS

PROMINENCES

1320 UT

McMATH-HULBERT

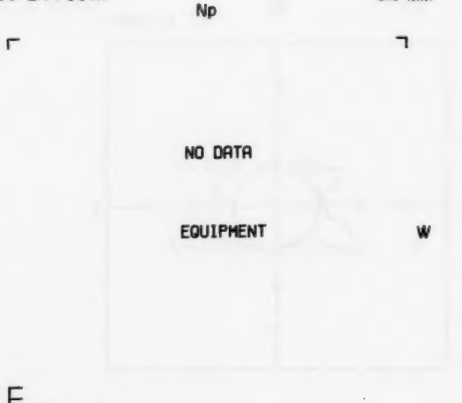
CALCIUM REPORT

NOSC LA POSTA

2.0 CM

NOSC LA POSTA

8.6 MM

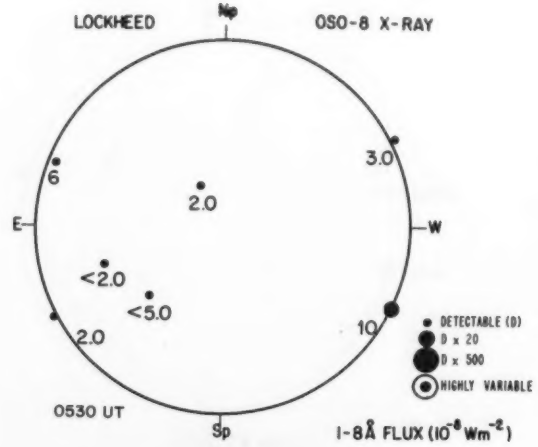


65

Jun 78

JUNE 9, 1978 (P=-12.47, B_o=0.30, L_o=282.76)

LOCKHEED OSO-8 X-RAY

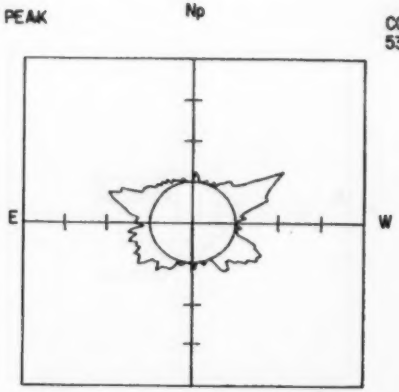


0530 UT

1-8Å FLUX (10^{-6} Wm^{-2})

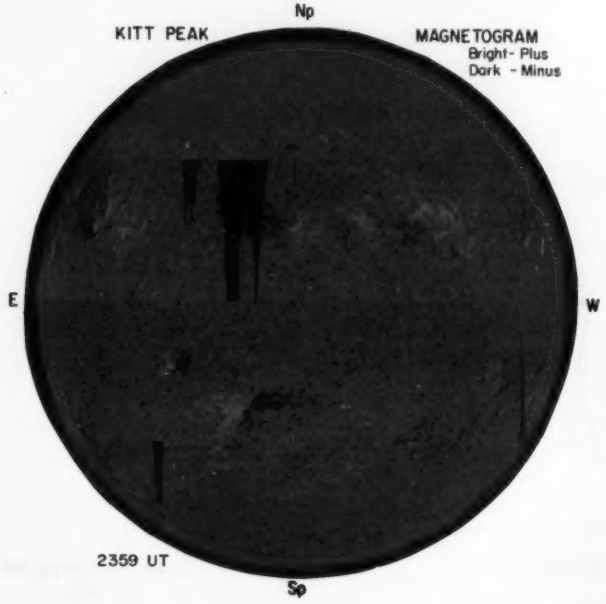
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



1449 UT

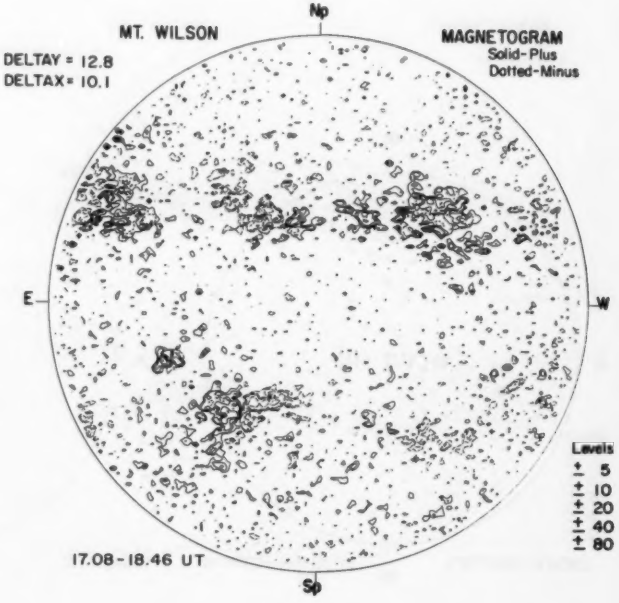
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



2359 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

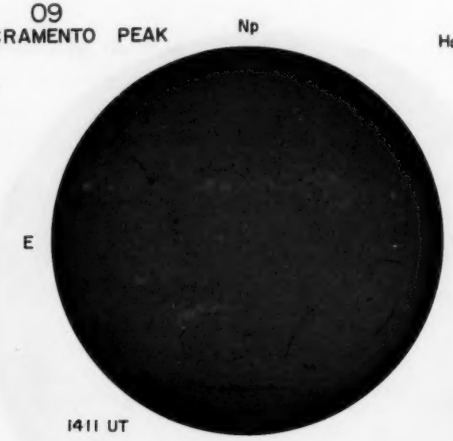
DELTAY = 12.8
DELTAX = 10.1



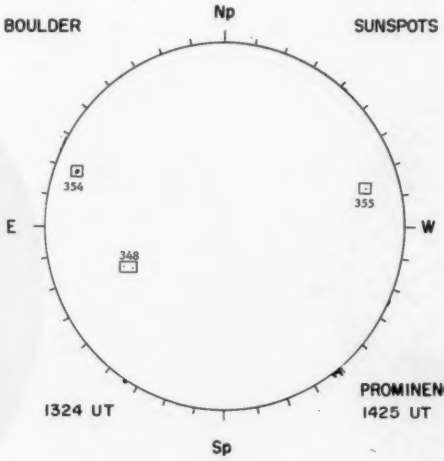
17.08 - 18.46 UT

09

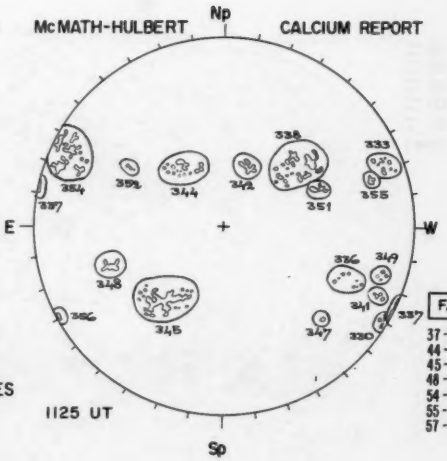
SACRAMENTO PEAK



Hα BOULDER



SUNSPOTS

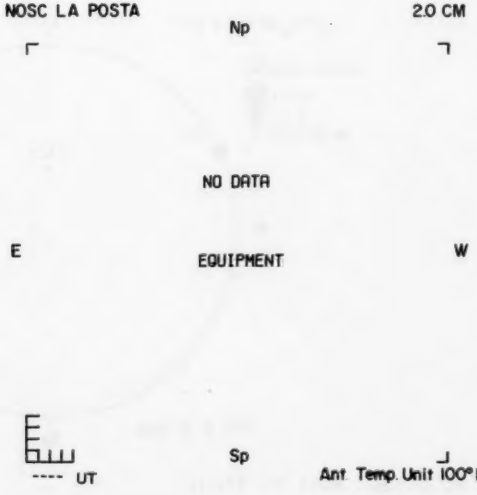


McMATH-HULBERT CALCIUM REPORT

FAIR	D

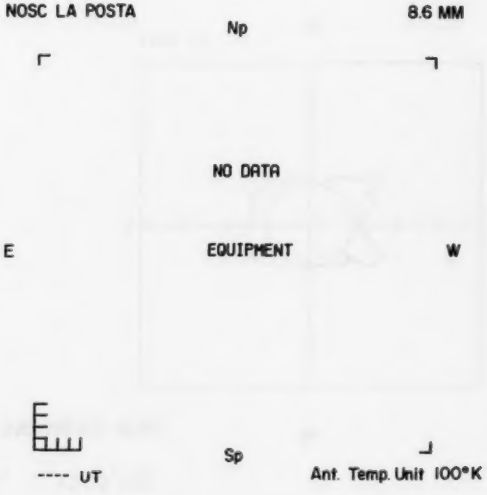
37 - 0500 - 2.5
44 - 0800 - 2.5
45 - 1800 - 2.5
48 - 0600 - 3.0
54 - 3500 - 3.0
55 - 0300 - 3.0
57 - 0900 - 2.5

NOSC LA POSTA



2.0 CM

NOSC LA POSTA

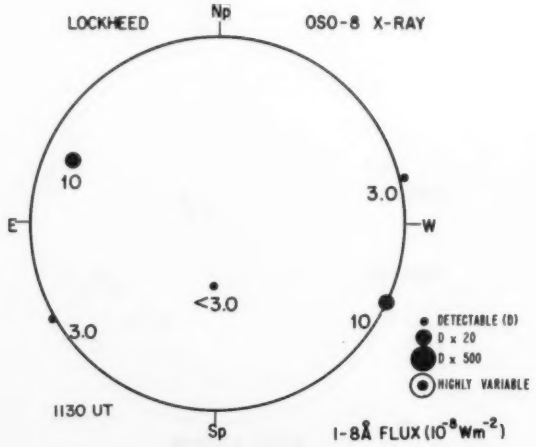


8.6 MM

67
Jun 78

JUNE 10, 1978 (P =-12.06, B_o =0.42, L_o =269.52)

LOCKHEED OSO-8 X-RAY

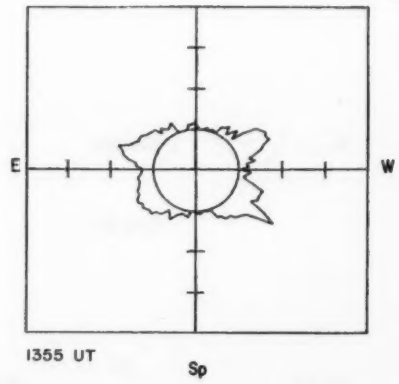


1130 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

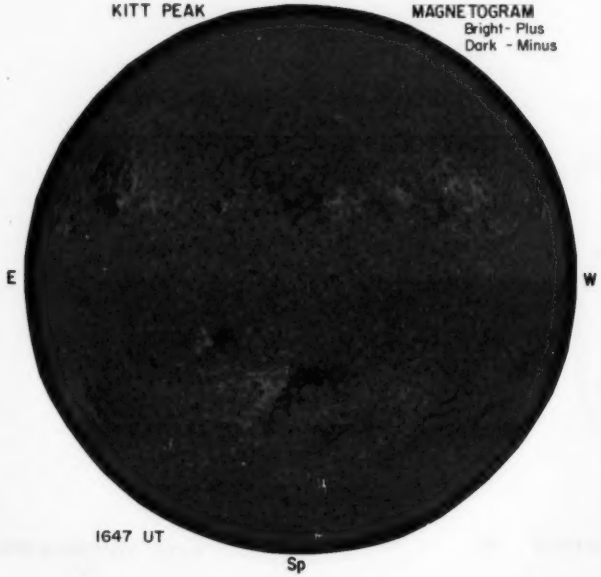
CORONA (1.15 $R_\odot$)
5303 Å



1355 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

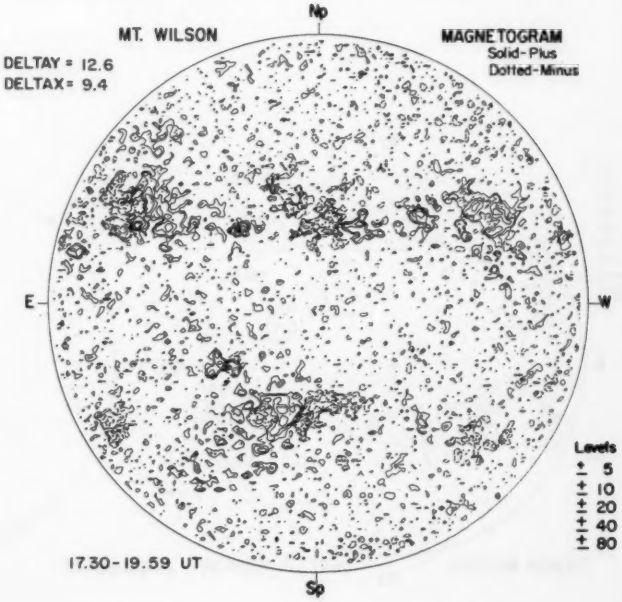


1647 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.4

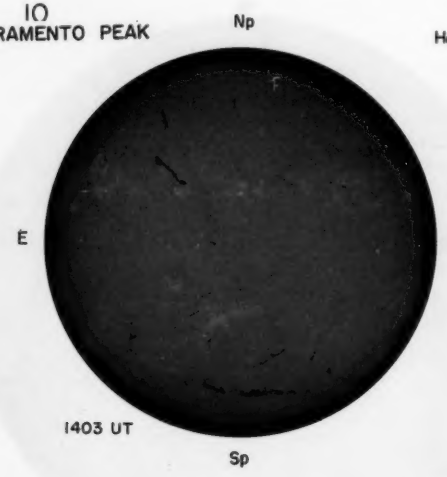
MAGNETOGRAM
Solid - Plus
Dotted - Minus



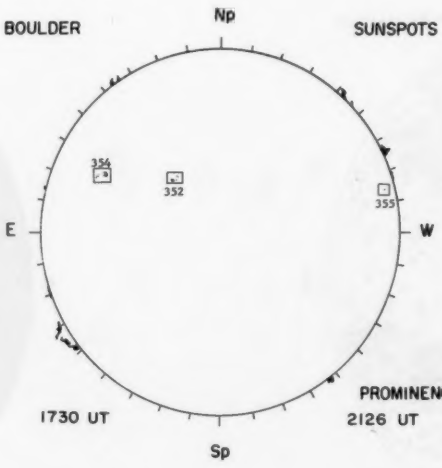
17.30 - 19.59 UT

10

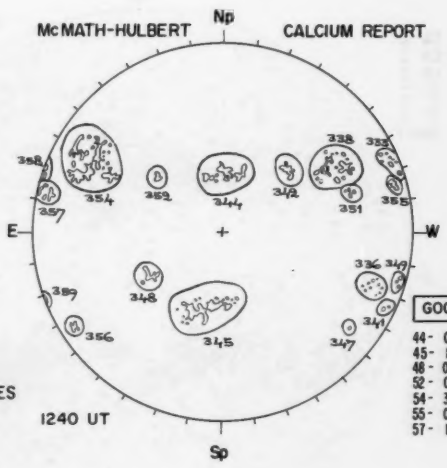
SACRAMENTO PEAK



Hα BOULDER



SUNSPOTS



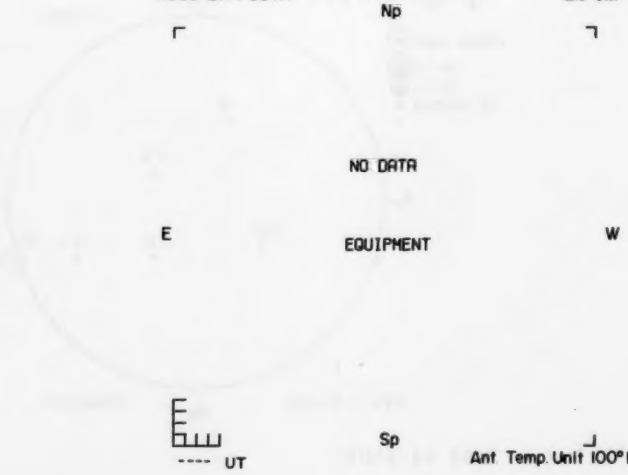
McMATH-HULBERT CALCIUM REPORT

GOOD	M

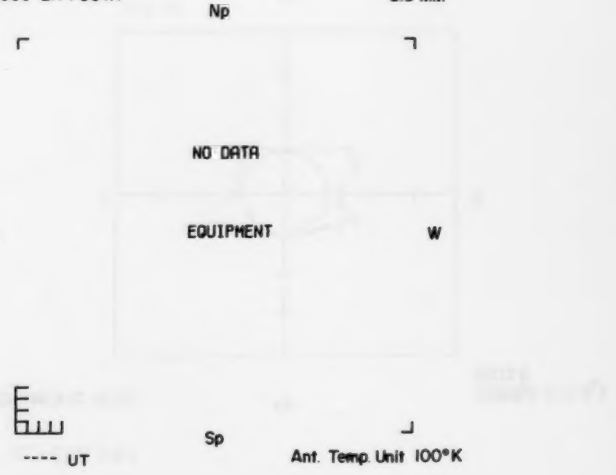
44 - 0900 - 2.5
45 - 1700 - 2.5
48 - 0500 - 2.5
52 - 0300 - 2.5
54 - 3600 - 2.5
55 - 0400 - 3.0
57 - 1000 - 2.5

PROMINENCES 2126 UT

NOSC LA POSTA Np 2.0 CM

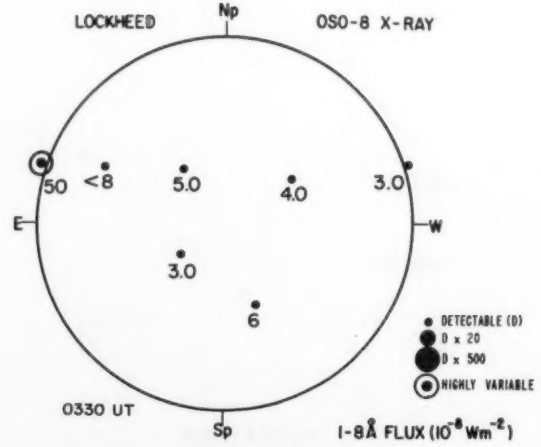


NOSC LA POSTA Np 8.6 MM



JUNE 11, 1978 (P = -11.65, B_0 = 0.54, L_0 = 256.28)

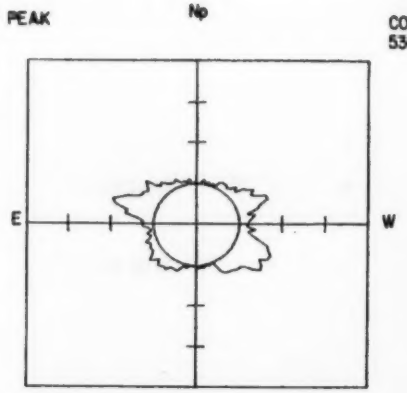
LOCKHEED — OSO-8 X-RAY



0330 UT

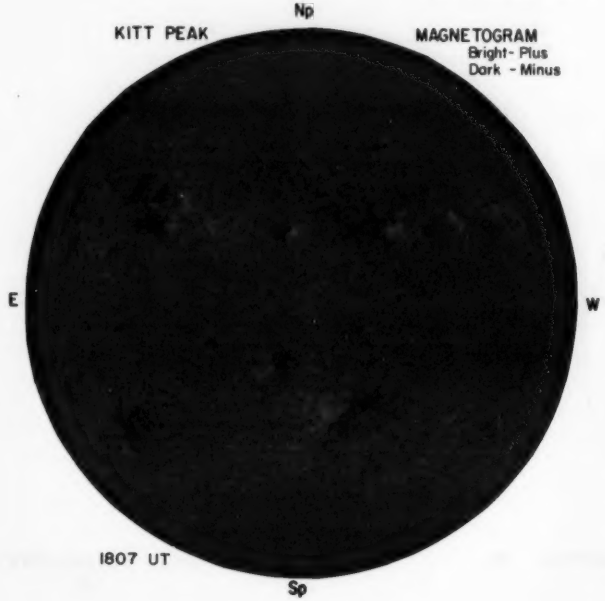
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å



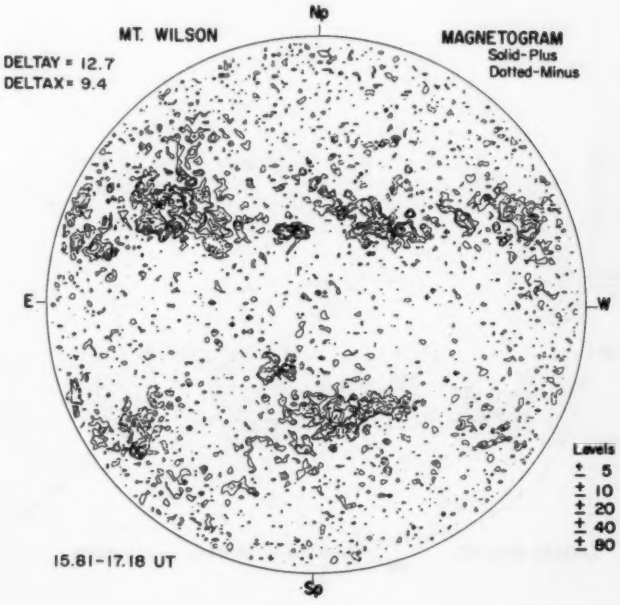
1415 UT

KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus

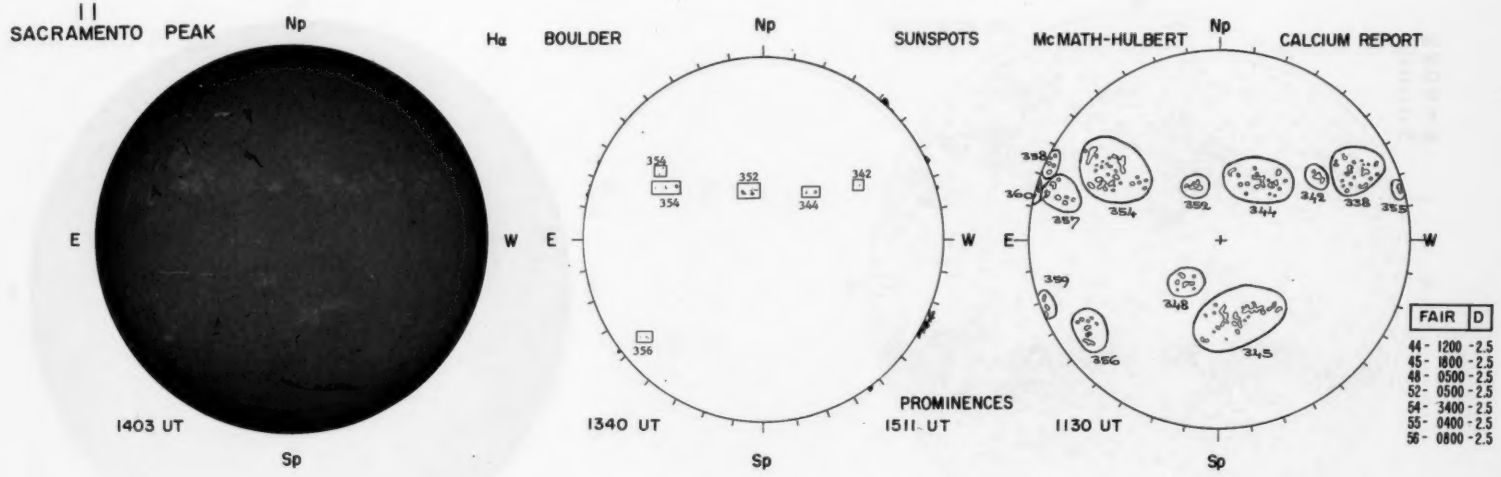


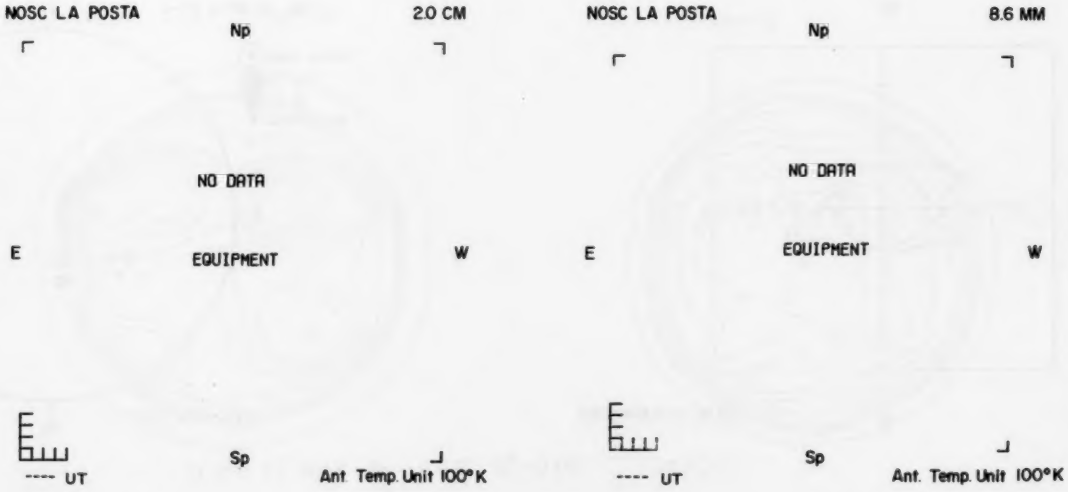
1807 UT

MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.7
DELTAX = 9.4



15.81-17.18 UT

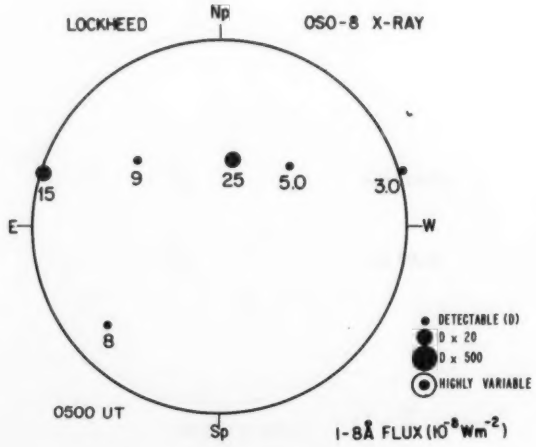

SACRAMENTO PEAK
Np
Hα
1403 UT
E
W
Sp
BOULDER
SUNSPOTS
1340 UT
PROMINENCES
1511 UT
McMATH-HULBERT
CALCIUM REPORT
1130 UT
FAIR D
44 - 1200 - 2.5
45 - 1800 - 2.5
48 - 0500 - 2.5
52 - 0500 - 2.5
54 - 3400 - 2.5
55 - 0400 - 2.5
56 - 0800 - 2.5


NOSC LA POSTA
Np
2.0 CM
NO DATA
E
EQUIPMENT
W
Sp
---- UT
Ant. Temp. Unit 100°K
NOSC LA POSTA
Np
8.6 MM
NO DATA
E
EQUIPMENT
W
Sp
---- UT
Ant. Temp. Unit 100°K

71
Jun 78

JUNE 12, 1978 (P = -11.23, B_0 = 0.66, L_0 = 243.05)

LOCKHEED OSO-8 X-RAY

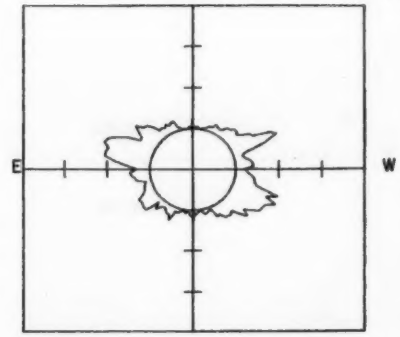


0500 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

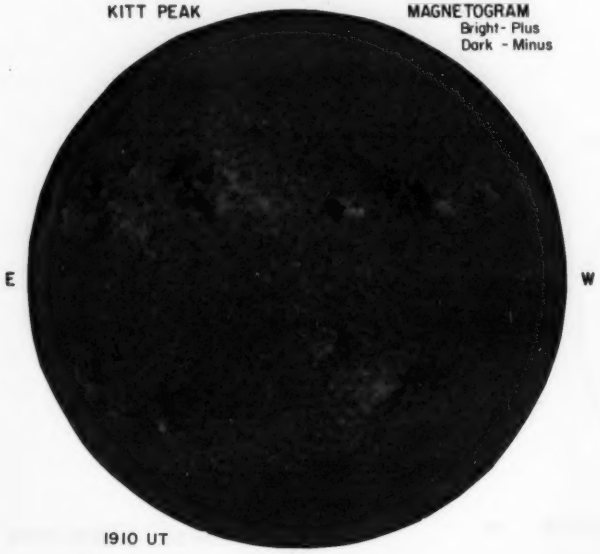
CORONA (1.15 $R_\odot$)
5303 Å



1414 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

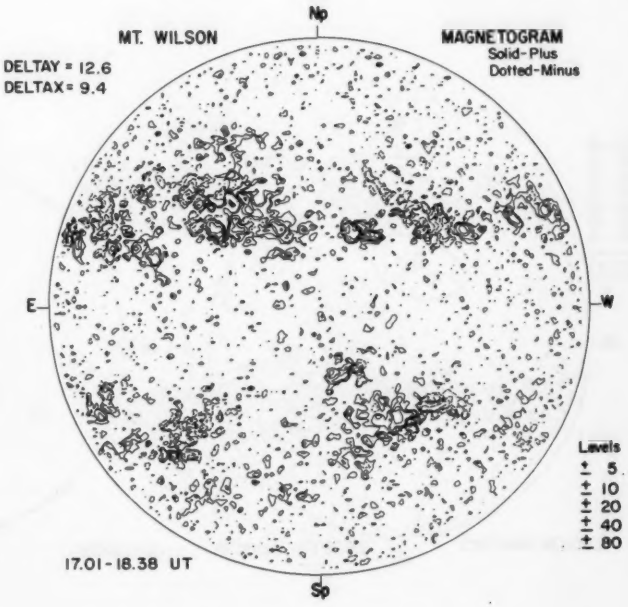


1910 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.4

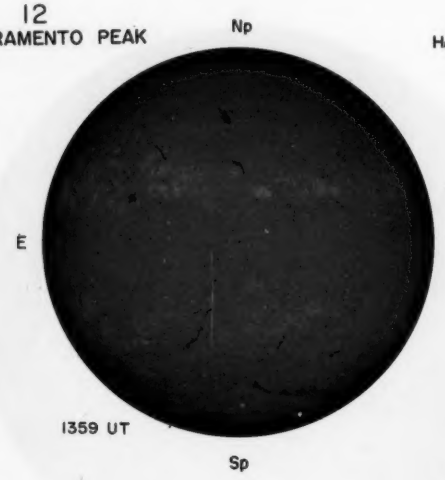
MAGNETOGRAM
Solid - Plus
Dotted - Minus



17.01 - 18.38 UT

12

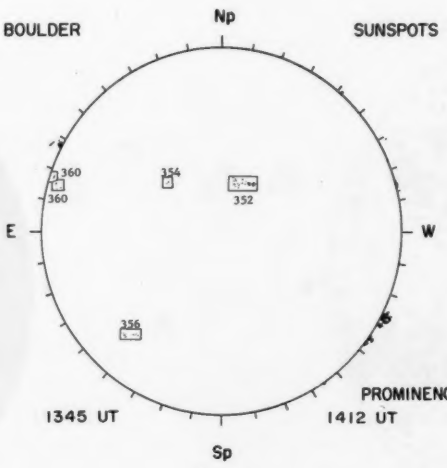
SACRAMENTO PEAK



1359 UT

Hα

BOULDER

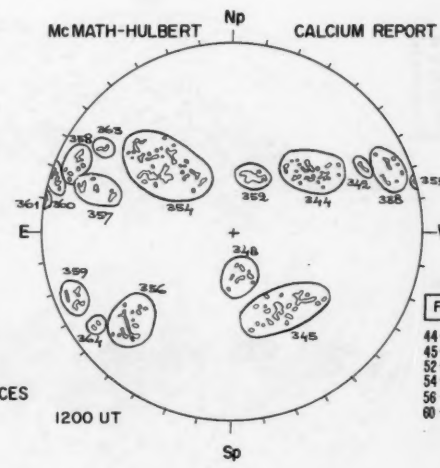


1345 UT

SUNSPOTS

1412 UT

McMATH-HULBERT



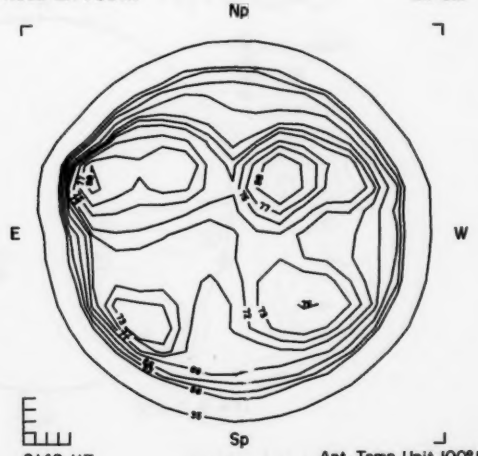
1200 UT

CALCIUM REPORT

FAIR	D
44 -	1400 - 2.5
45 -	1800 - 2.5
52 -	0700 - 3.0
54 -	3500 - 2.5
56 -	1000 - 3.0
60 -	1200 - 2.5

PROMINENCES

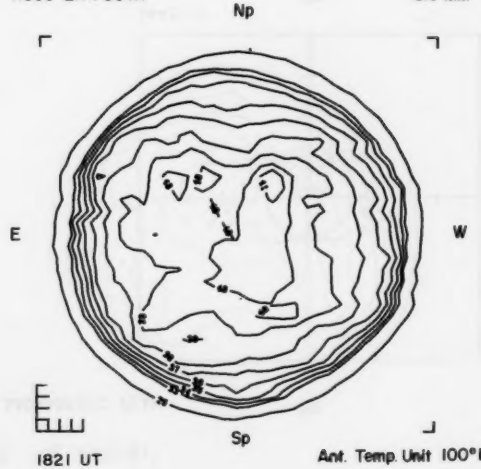
NOSC LA POSTA 2.0 CM



2148 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM



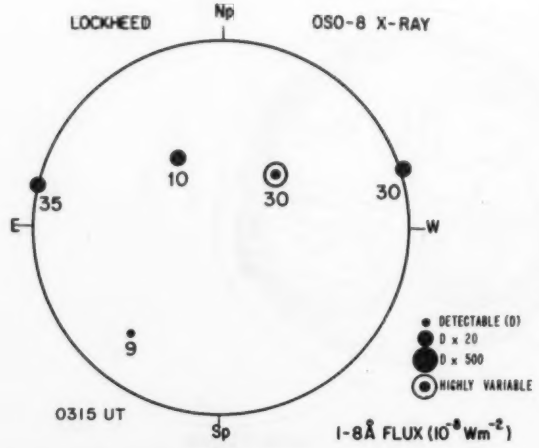
1821 UT

Ant. Temp. Unit 100°K

73
Jun 78

JUNE 13, 1978 (P=-10.81, B_o=0.78, L_o=229.81)

LOCKHEED OSO-8 X-RAY

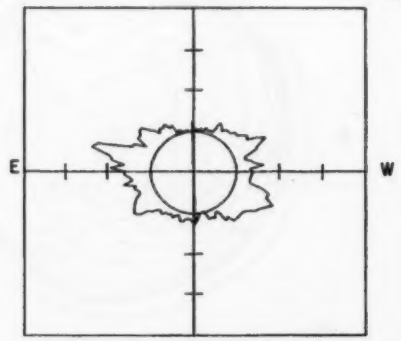


0315 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

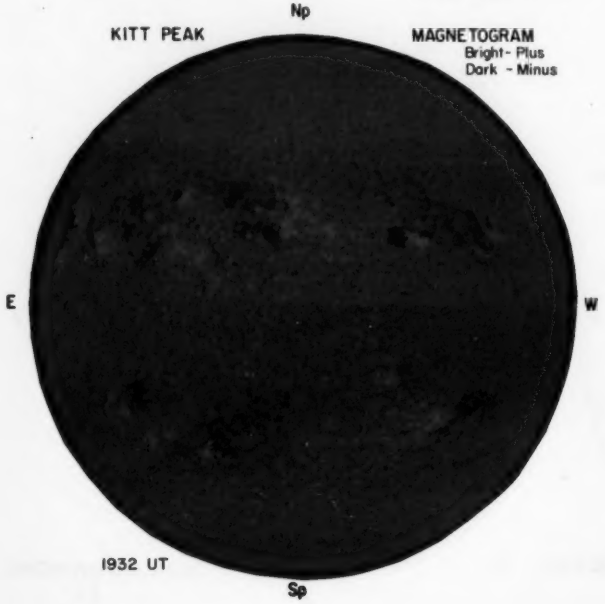
CORONA (1.15 $R_\odot$)
5303 Å



1443 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

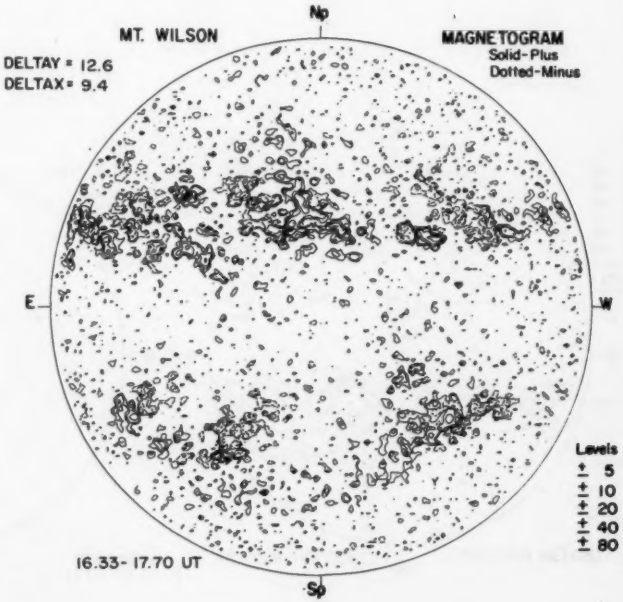


1932 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.4

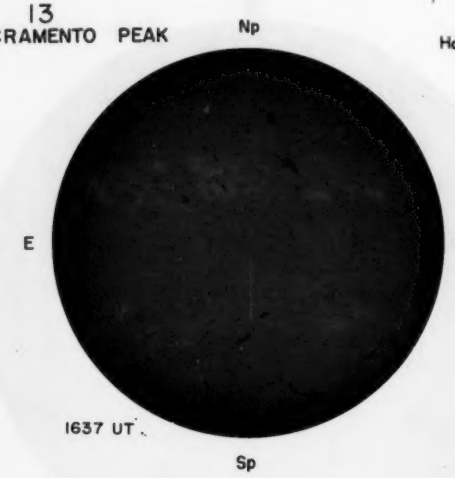
MAGNETOGRAM
Solid - Plus
Dotted - Minus



16.33 - 17.70 UT

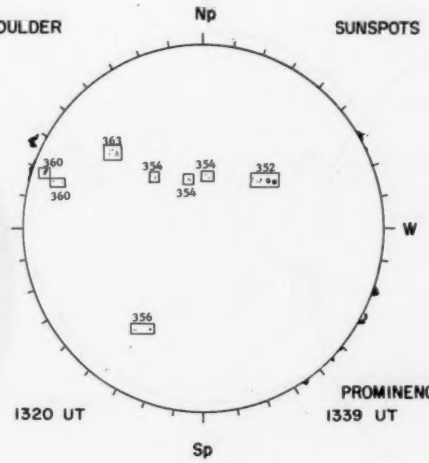
13

SACRAMENTO PEAK



1637 UT

Hα BOULDER



1320 UT

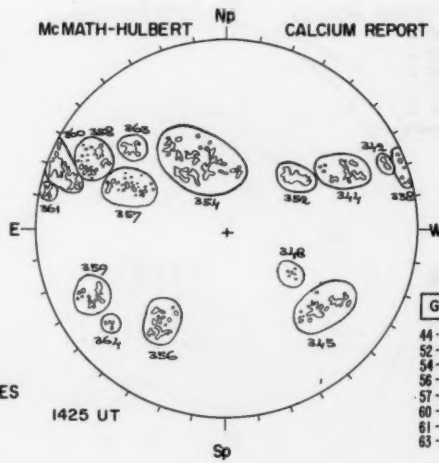
SUNSPOTS

PROMINENCES

1339 UT

McMATH-HULBERT

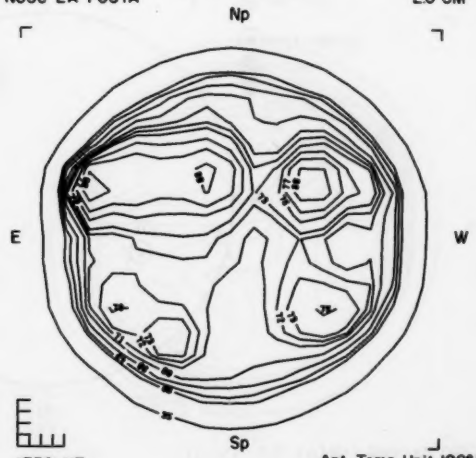
CALCIUM REPORT



1425 UT

GOOD	D
44 - 1200 - 2.5	
52 - 1500 - 3.0	
54 - 3200 - 2.5	
56 - 1000 - 2.5	
57 - 0900 - 2.5	
60 - 3500 - 3.0	
61 - 0600 - 3.0	
63 - 0700 - 3.0	

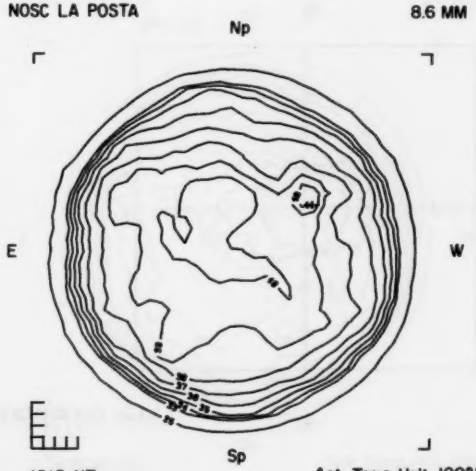
NOSC LA POSTA 2.0 CM



1739 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

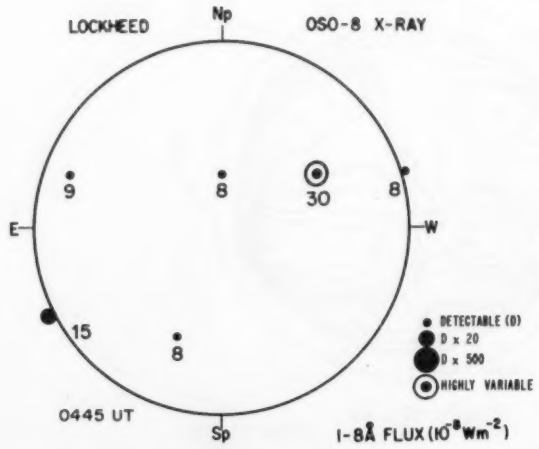


1813 UT

Ant. Temp. Unit 100°K

JUNE 14, 1978 (P =-10.39, B_0 =0.90, L_0 =216.58)

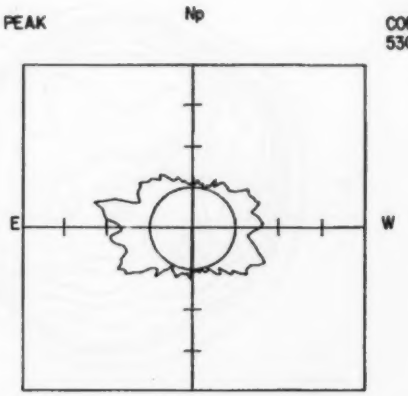
LOCKHEED OSO-8 X-RAY



0445 UT

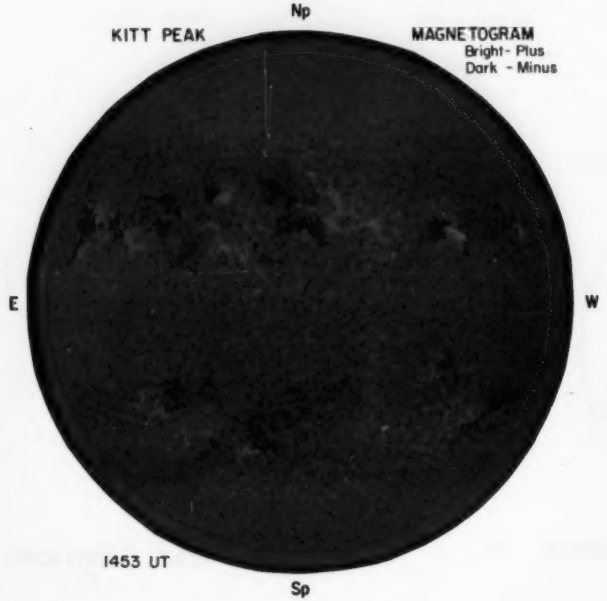
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



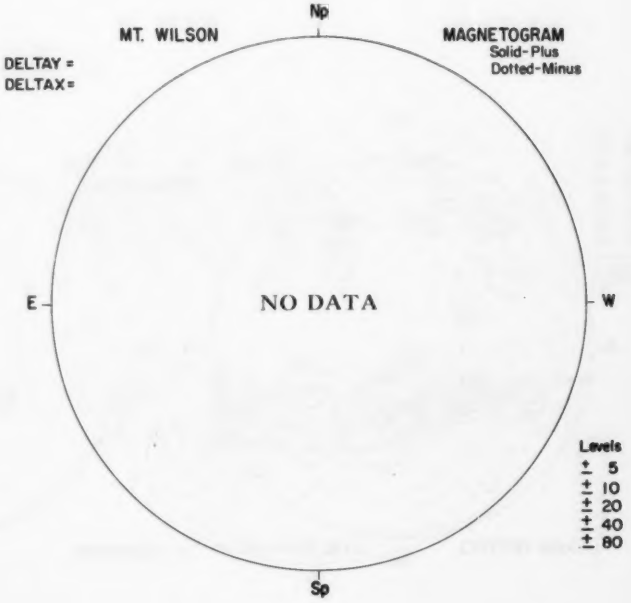
1507 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



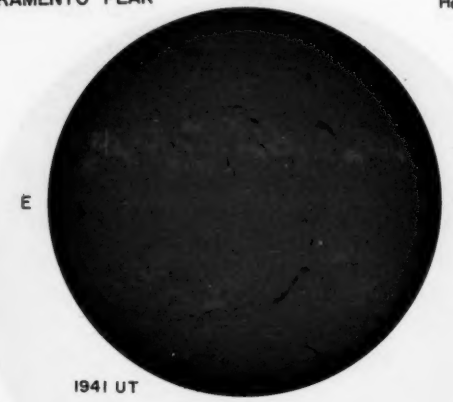
1453 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =



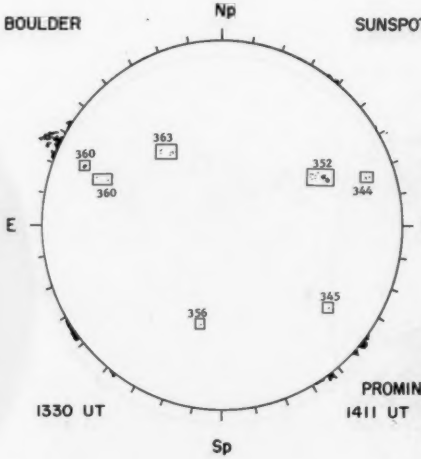
14

SACRAMENTO PEAK



Hα

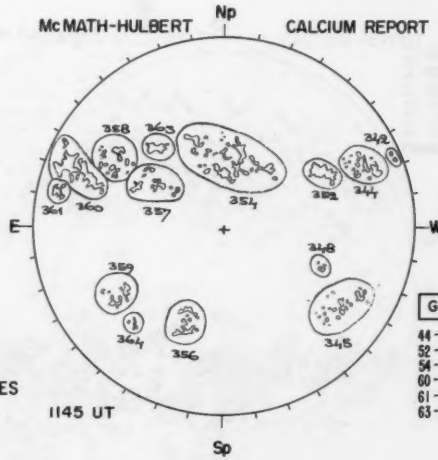
BOULDER



SUNSPOTS

McMATH-HULBERT

CALCIUM REPORT



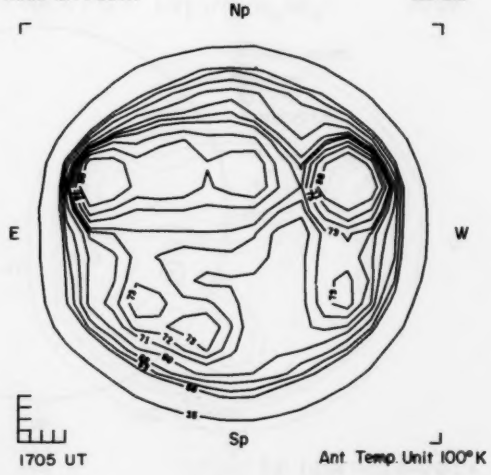
PROMINENCES

1411 UT

GOOD	S
44 - 1300 - 2.5	
52 - 1500 - 3.5	
54 - 3500 - 2.5	
60 - 4000 - 3.0	
61 - 0600 - 2.5	
63 - 0800 - 3.0	

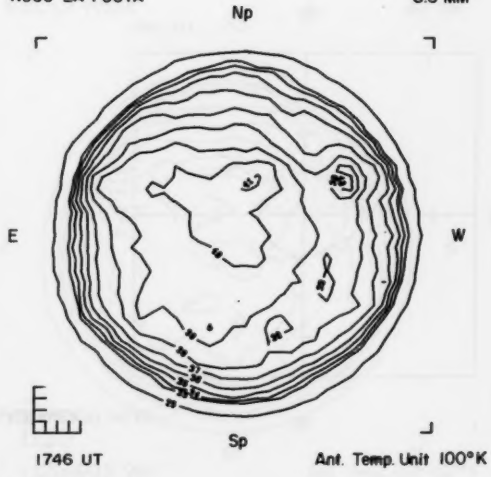
NOSC LA POSTA

2.0 CM



NOSC LA POSTA

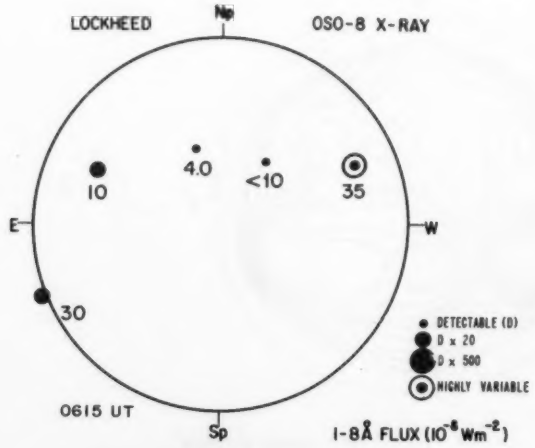
8.6 MM



77
Jun 78

JUNE 15, 1978 (P=-9.97, B_o=1.02, L_o=203.34)

LOCKHEED OSO-8 X-RAY



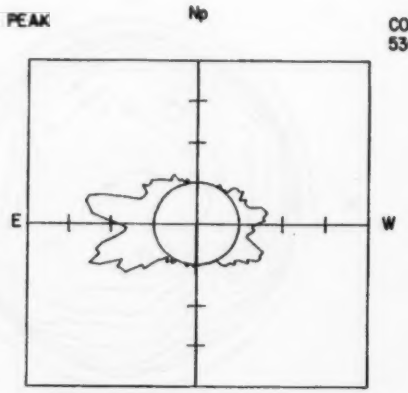
DETECTABLE (D)
D x 20
D x 500
HIGHLY VARIABLE

0615 UT

1-8Å FLUX (10^{-8} Wm^{-2})

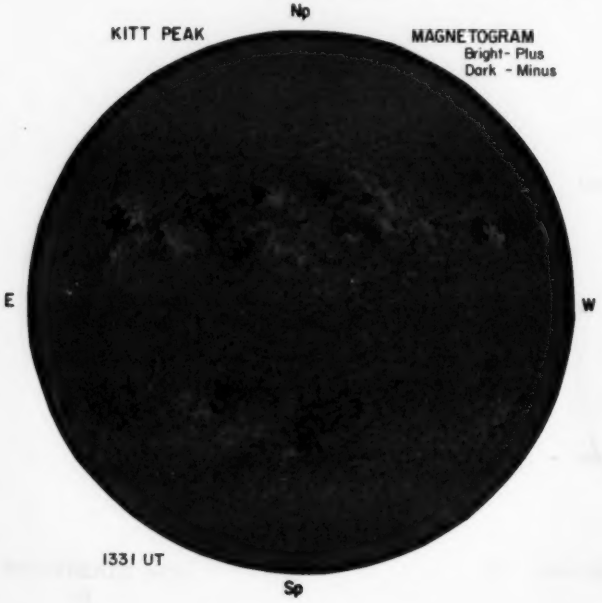
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



1441 UT

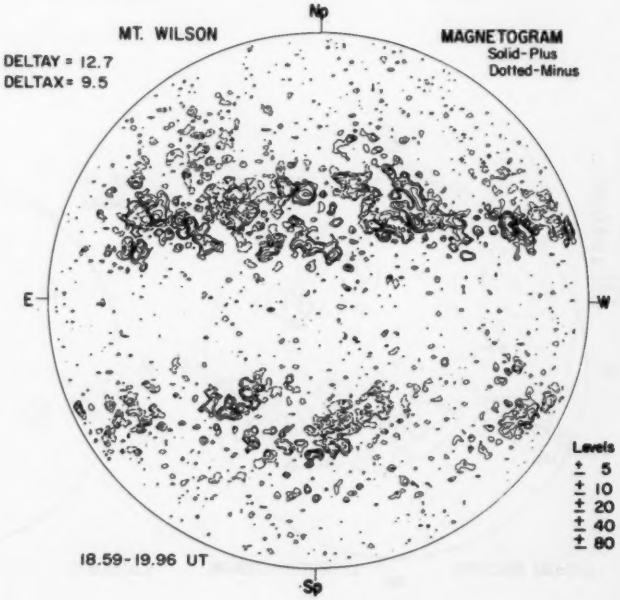
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1331 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.5

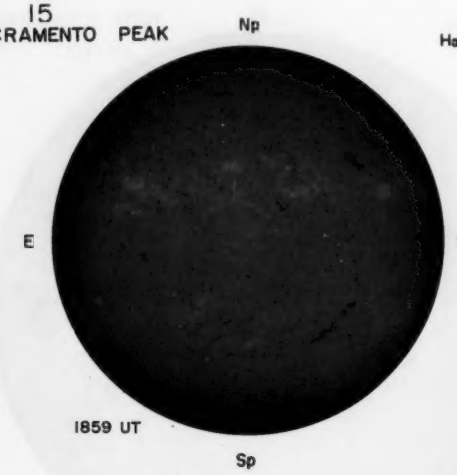


Levels
± 5
± 10
± 20
± 40
± 80

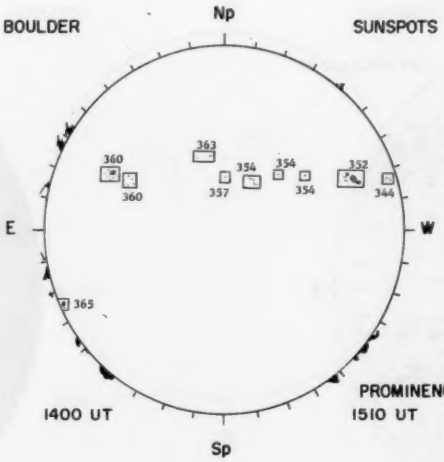
18.59-19.96 UT

15

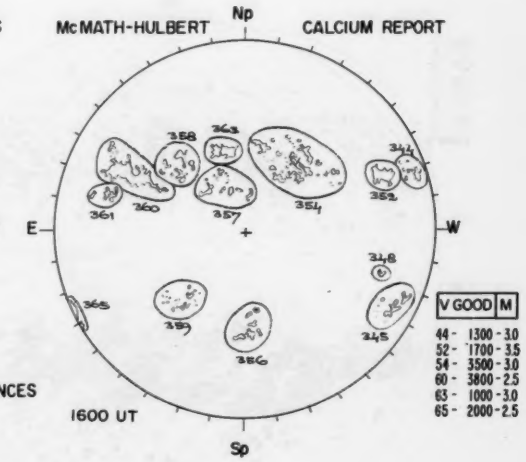
SACRAMENTO PEAK



Hα BOULDER



SUNSPOTS

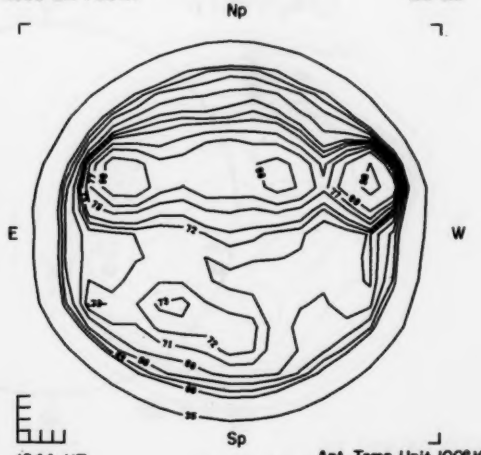


McMATH-HULBERT CALCIUM REPORT

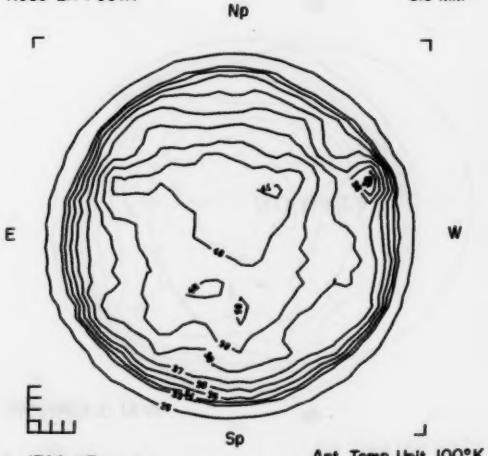
V GOOD	M
44 - 1300 - 3.0	
52 - 1700 - 3.5	
54 - 3500 - 3.0	
60 - 3800 - 2.5	
63 - 1000 - 3.0	
65 - 2000 - 2.5	

PROMINENCES 1510 UT

NOSC LA POSTA 2.0 CM

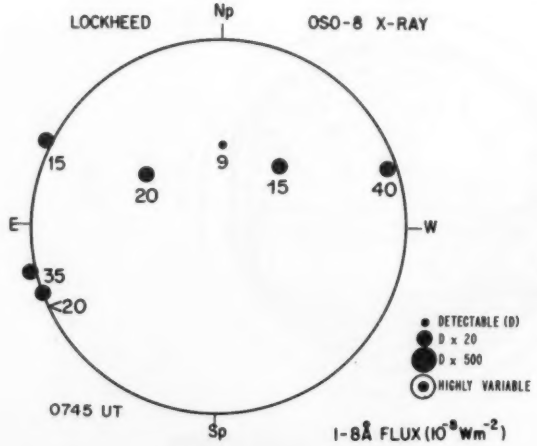


NOSC LA POSTA 8.6 MM



JUNE 16, 1978 (P=-9.54, B_o=1.14, L_o=190.10)

LOCKHEED OSO-8 X-RAY

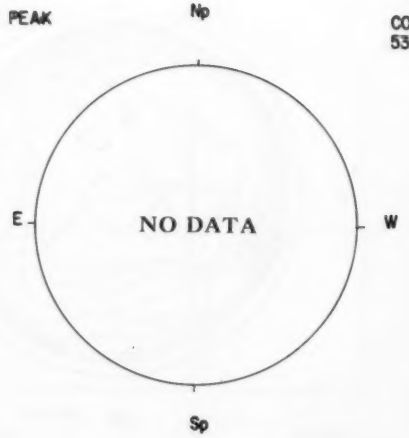


0745 UT

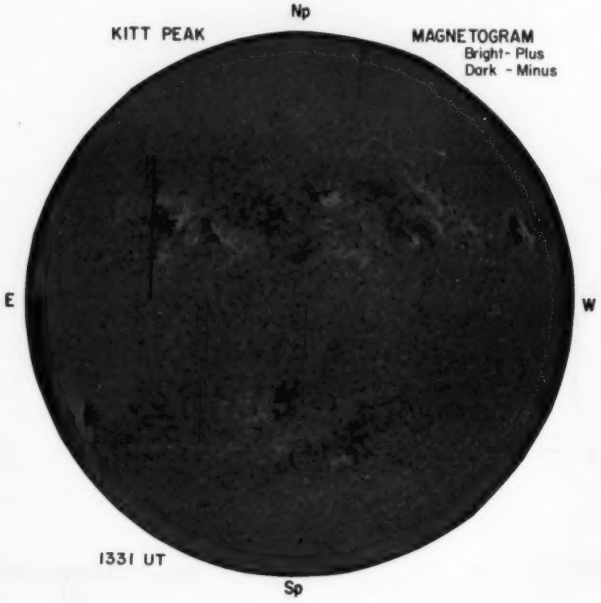
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



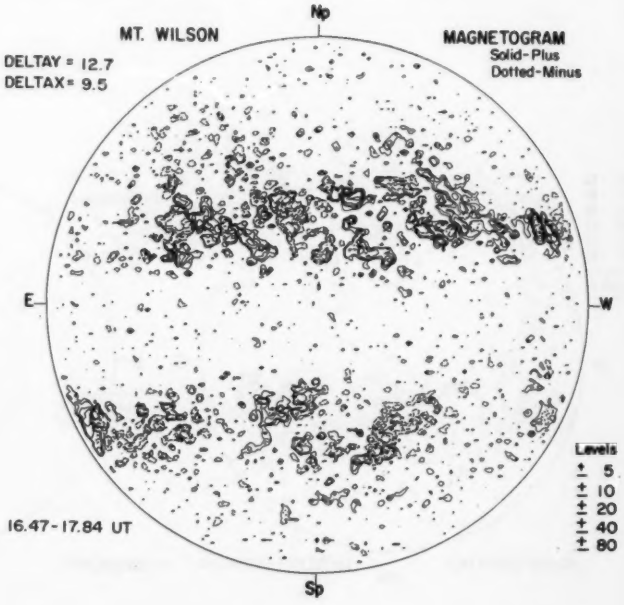
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1331 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

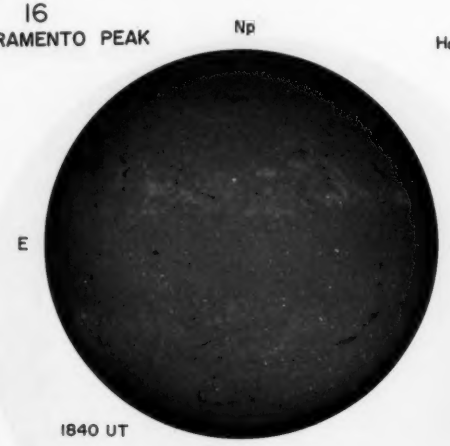
DELTAY = 12.7
DELTAX = 9.5



16.47-17.84 UT

16

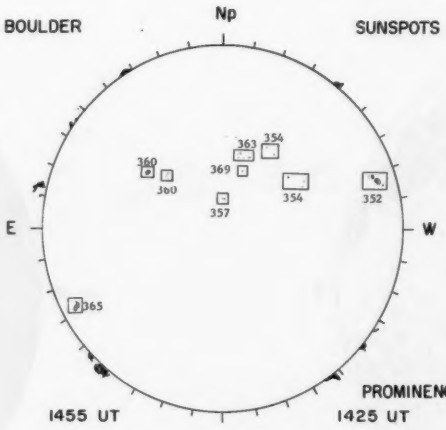
SACRAMENTO PEAK



1840 UT

Hα

BOULDER



1455 UT

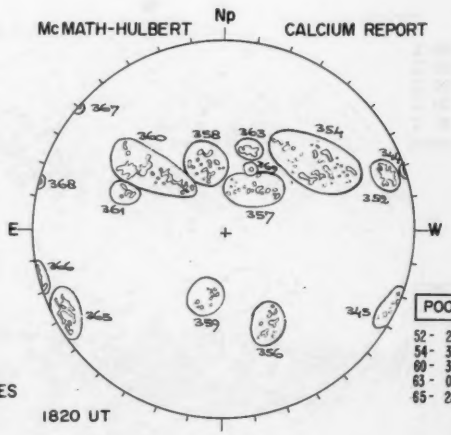
SUNSPOTS

PROMINENCES

1425 UT

McMATH-HULBERT

CALCIUM REPORT

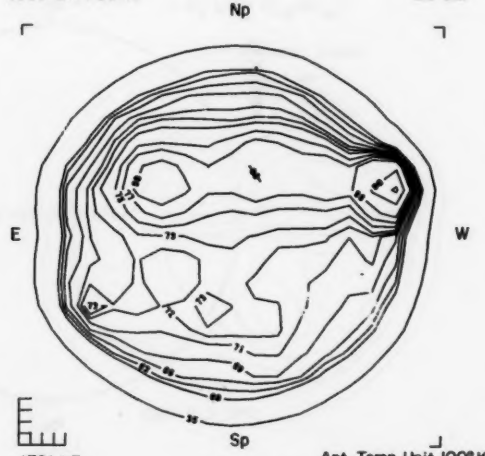


1820 UT

POOR	M
52 -	2000 - 3.0
54 -	3300 - 2.5
60 -	3200 - 2.5
63 -	0700 - 3.0
65 -	2800 - 2.5

NOSC LA POSTA

2.0 CM

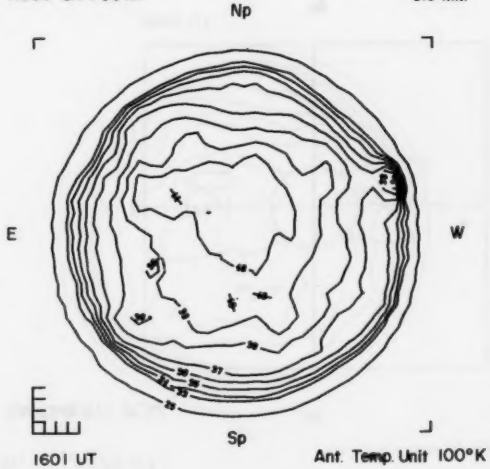


1701 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM



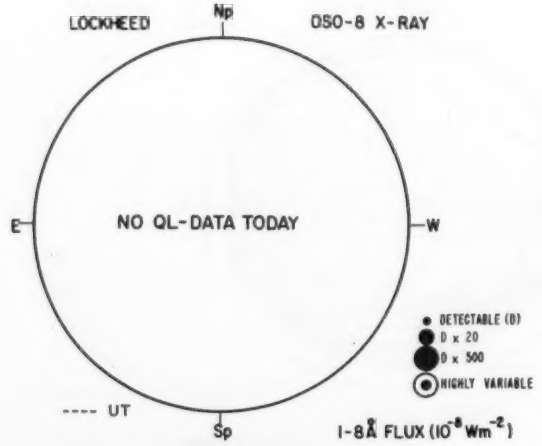
1601 UT

Ant. Temp. Unit 100°K

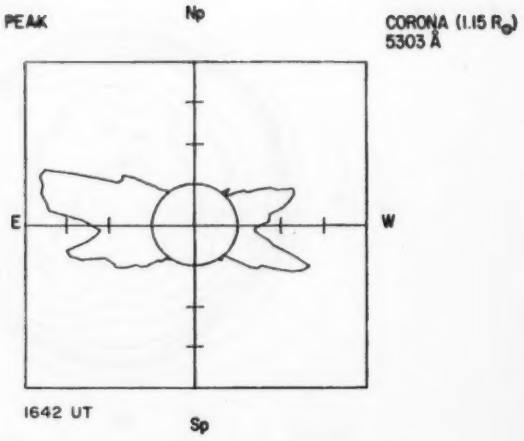
81
Jun 78

JUNE 17, 1978 (P=-9.11, B_0 = 1.26, L_0 = 176.87)

LOCKHEED — GOS-8 X-RAY

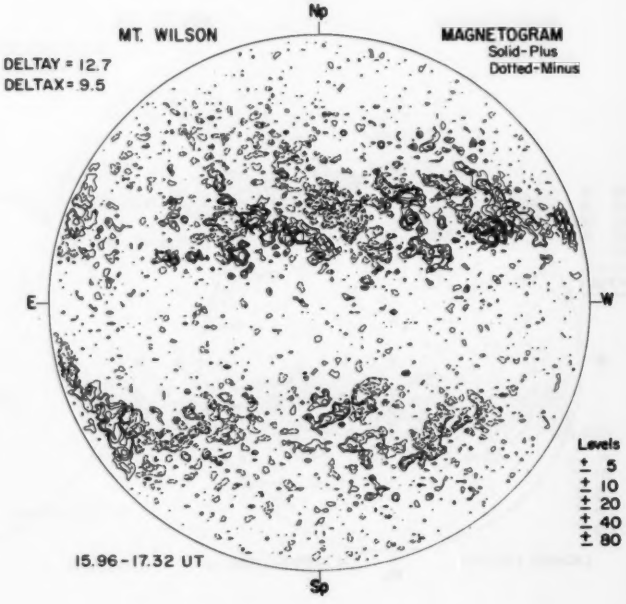


SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å



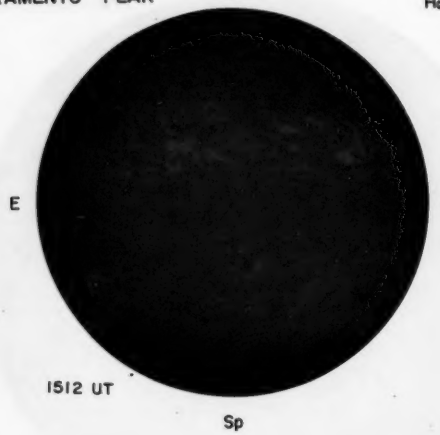
KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.7
DELTAX = 9.5

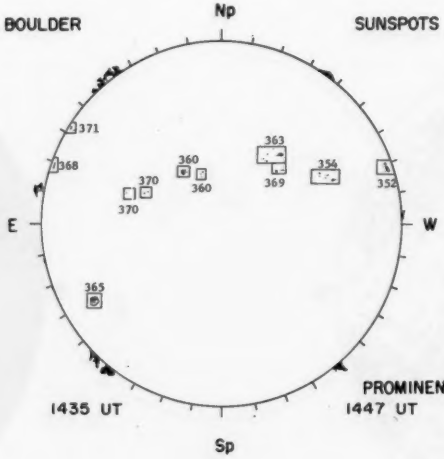


17

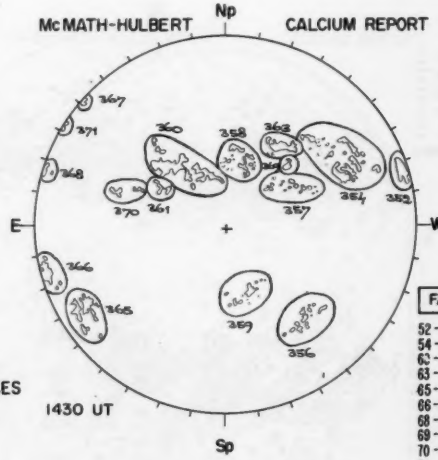
SACRAMENTO PEAK



BOULDER SUNSPOTS

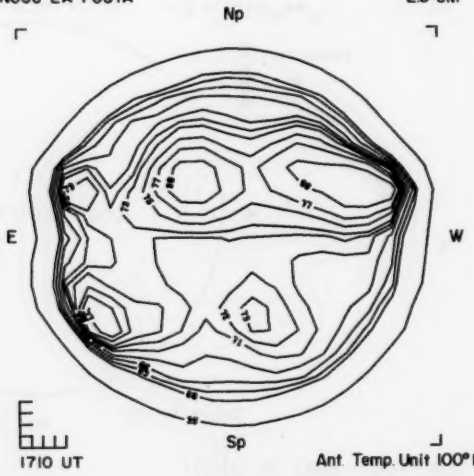


McMATH-HULBERT CALCIUM REPORT

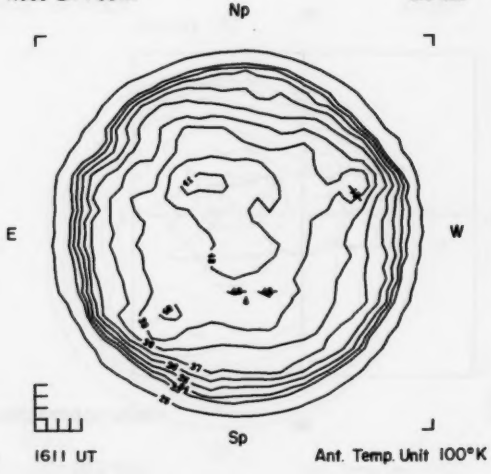


FAIR	M
52 - 2000 - 3.0	
54 - 3700 - 3.0	
62 - 3200 - 2.5	
63 - 0900 - 3.0	
65 - 2500 - 3.0	
66 - 2000 - 3.0	
68 - 1000 - 2.5	
69 - 0300 - 2.5	
70 - 0600 - 2.5	
71 - 0600 - 2.5	

NOSC LA POSTA 2.0 CM



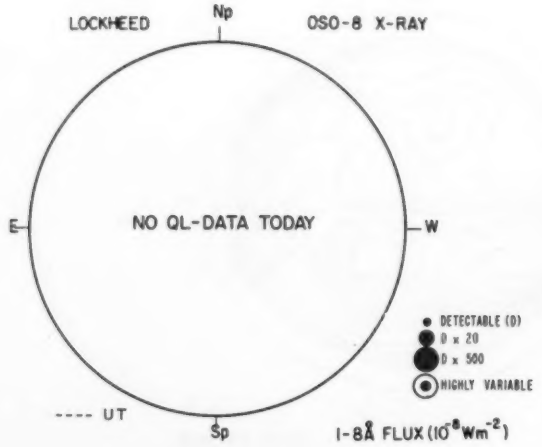
NOSC LA POSTA 8.6 MM



JUNE 18, 1978 (P = -8.67, B_o = 1.37, L_o = 163.63)

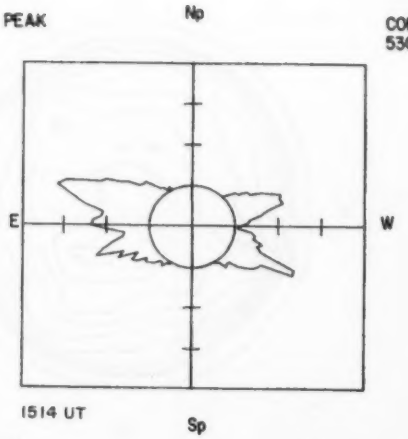
84
Jun 78

LOCKHEED OSO-8 X-RAY

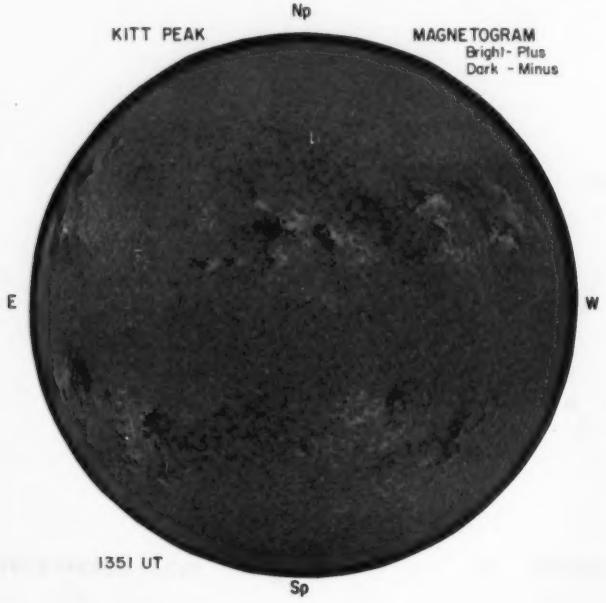


1-8Å FLUX (10^{-8} Wm^{-2})

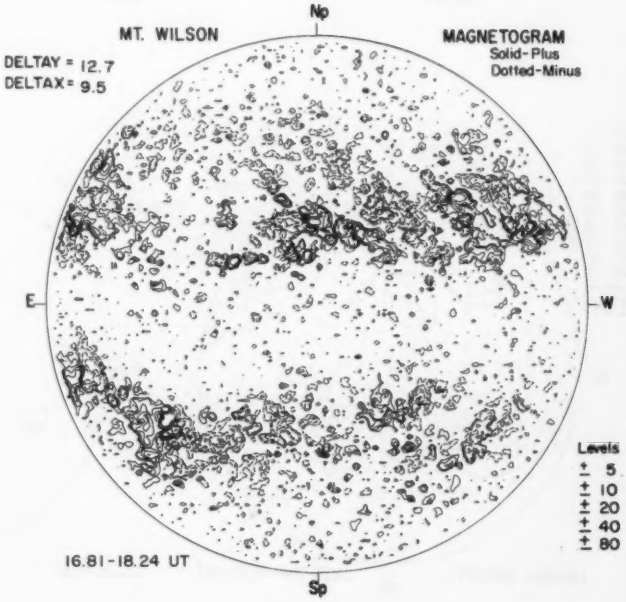
SACRAMENTO PEAK



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

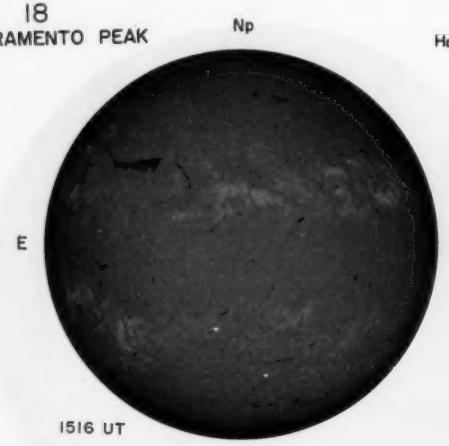


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.7
DELTAX = 9.5



18

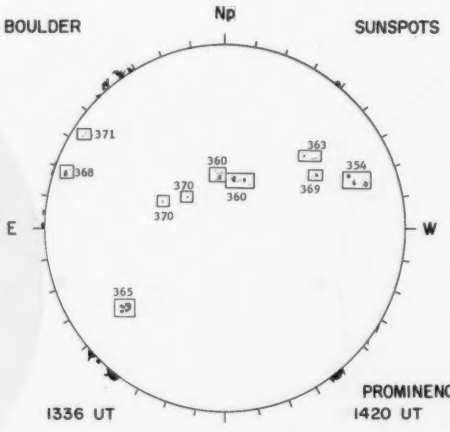
SACRAMENTO PEAK



1516 UT

Hα

BOULDER



1336 UT

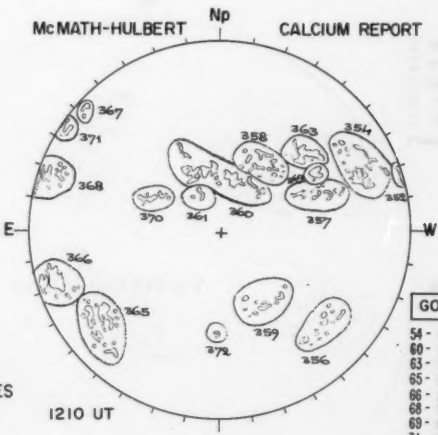
SUNSPOTS

PROMINENCES

1420 UT

McMATH-HULBERT

CALCIUM REPORT

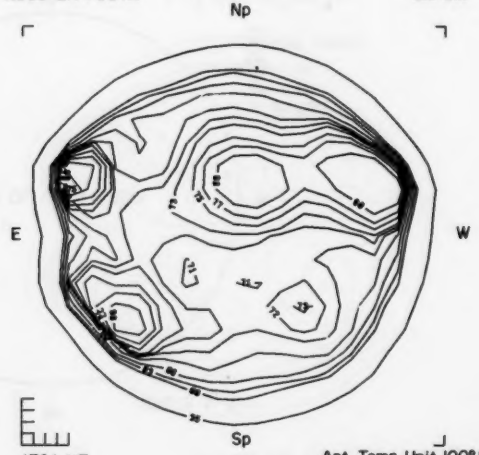


1210 UT

GOOD	S
54 -	4000-3.0
60 -	3200-2.5
63 -	1100-3.0
65 -	2800-3.0
66 -	2800-2.5
68 -	2100-3.0
69 -	0400-2.5
71 -	0800-2.5

NOSC LA POSTA

2.0 CM

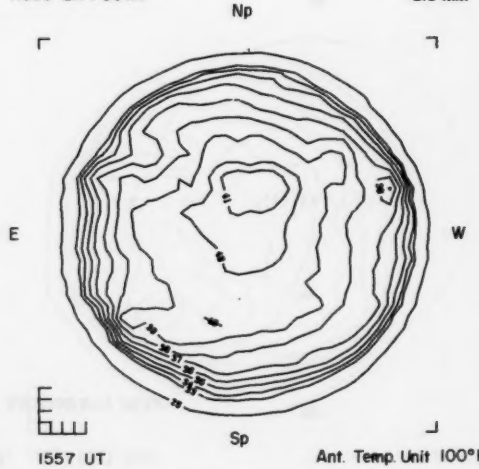


1701 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM



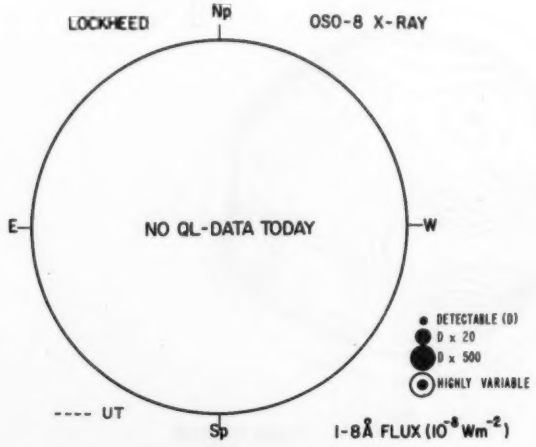
1557 UT

Ant. Temp. Unit 100°K

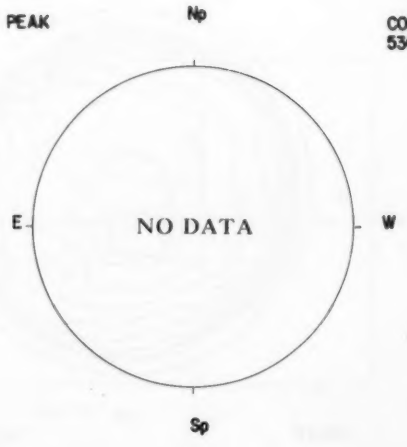
85
Jun 78

JUNE 19, 1978 (P = -8.24, B_o = 1.49, L_o = 150.39)

LOCKHEED Np OSO-8 X-RAY



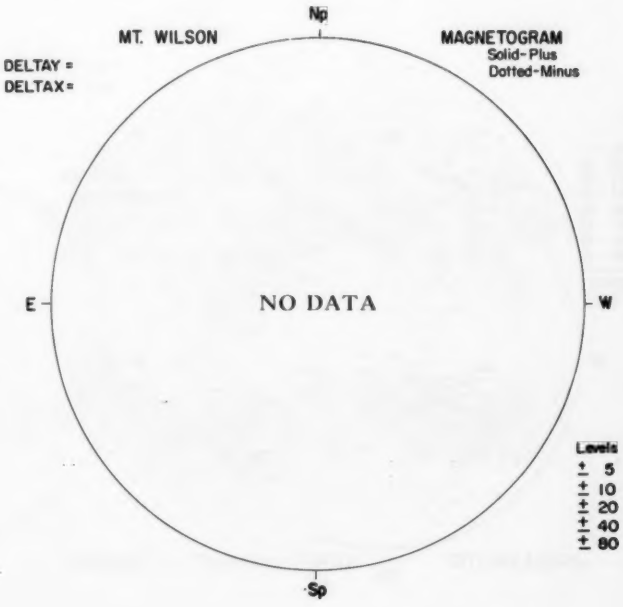
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus

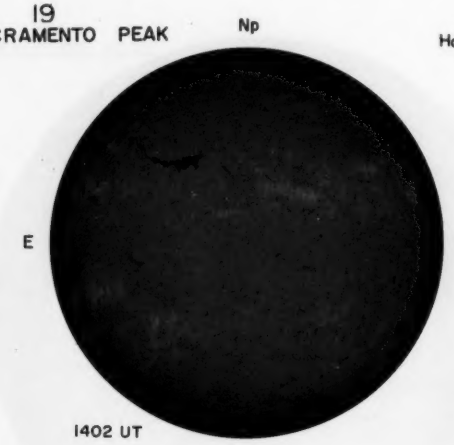
MT. WILSON Np MAGNETOGRAM Solid - Plus Dotted - Minus

DELTAY =
DELTAX =



19

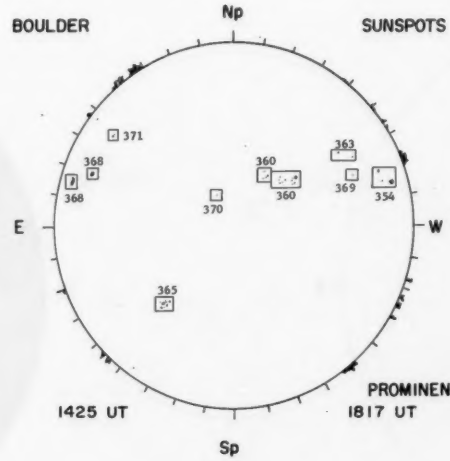
SACRAMENTO PEAK



1402 UT

Hα

BOULDER

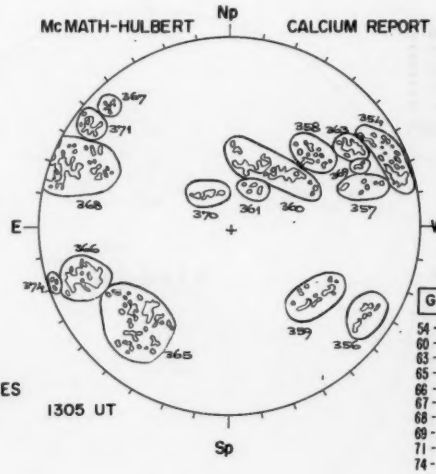


1425 UT

SUNSPOTS

1817 UT

McMATH-HULBERT



1305 UT

CALCIUM REPORT

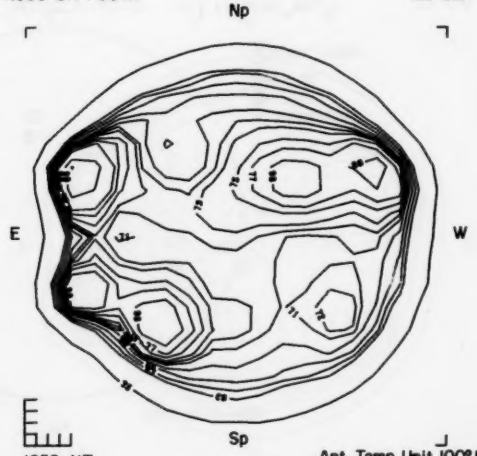
PROMINENCES

GOOD	D

54 - 4000 -3.0
60 - 3500 -3.0
63 - 1400 -3.0
65 - 3200 -3.0
66 - 3700 -3.0
67 - 0700 -2.5
68 - 6500 -3.5
69 - 0400 -3.0
71 - 1400 -3.5
74 - 0500 -2.5

NOSC LA POSTA

2.0 CM

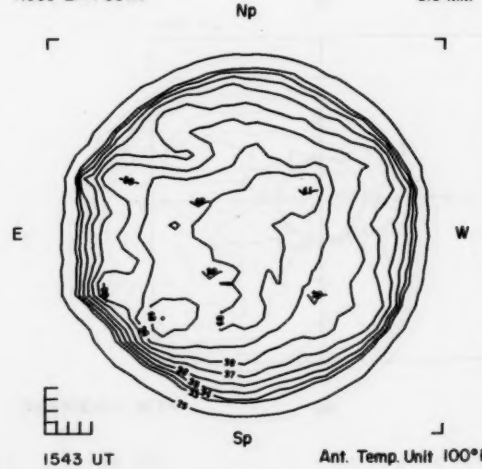


1659 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM



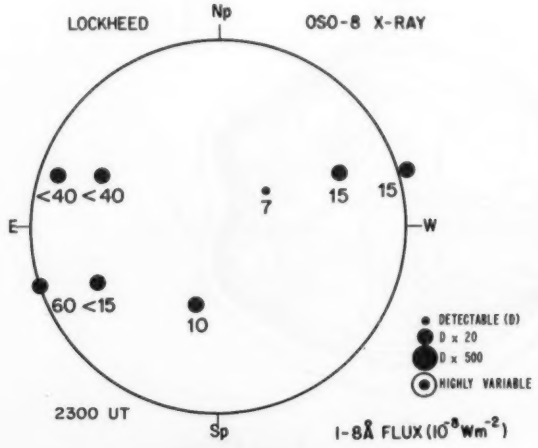
1543 UT

Ant. Temp. Unit 100°K

87
Jun 78

JUNE 20, 1978 (P = -7.80, B_o = 1.61, L_o = 137.15)

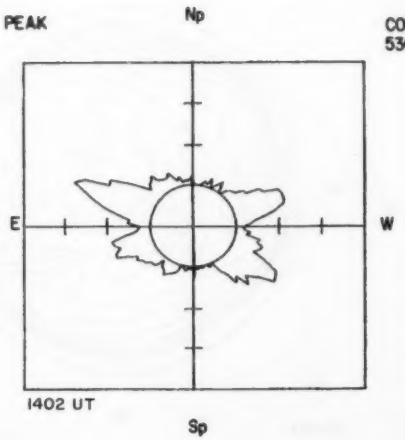
LOCKHEED OSO-8 X-RAY



2300 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK



CORONA (1.15 $R_\odot$)
5303 Å

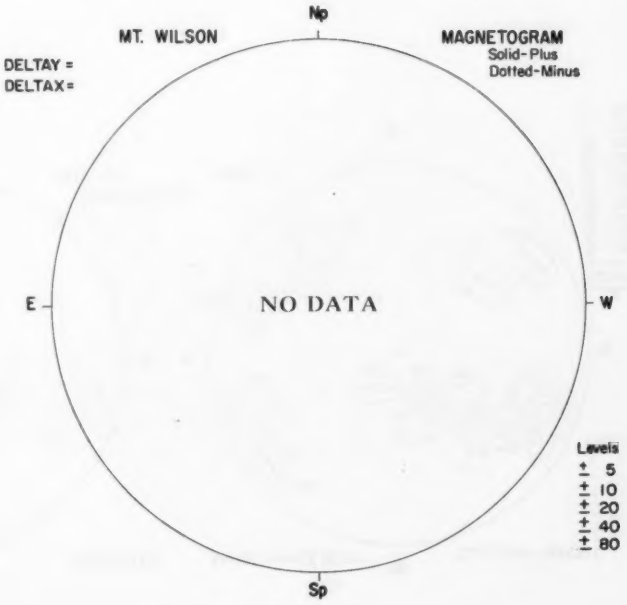
1402 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

1333 UT

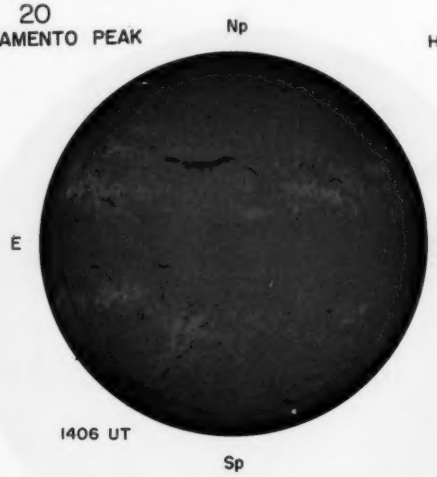
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =



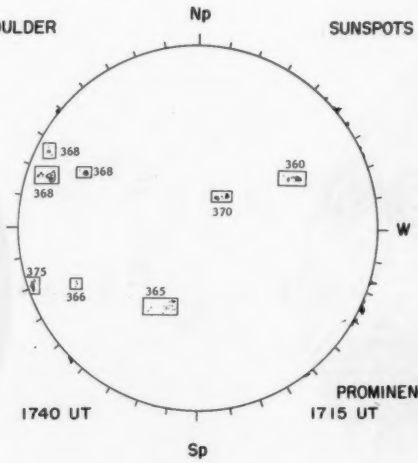
20

SACRAMENTO PEAK



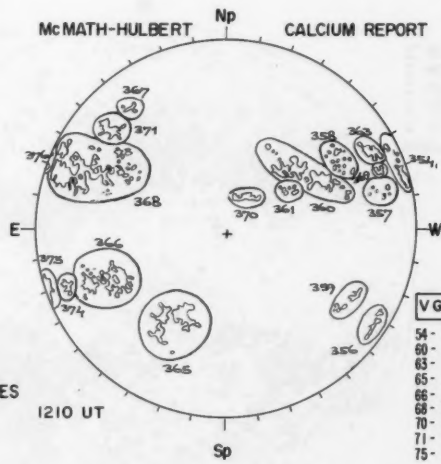
1406 UT

Hα BOULDER



1740 UT

SUNSPOTS



PROMINENCES

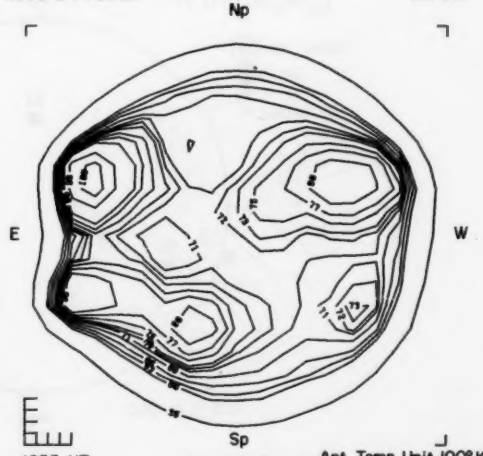
1715 UT

1210 UT

McMATH-HULBERT CALCIUM REPORT

V GOOD	D
54 - 3500 - 2.5	
60 - 3500 - 3.0	
63 - 1500 - 3.0	
65 - 3600 - 3.0	
66 - 3700 - 3.0	
68 - 9000 - 3.5	
70 - 0600 - 3.0	
71 - 1500 - 2.5	
75 - 3800 - 3.5	

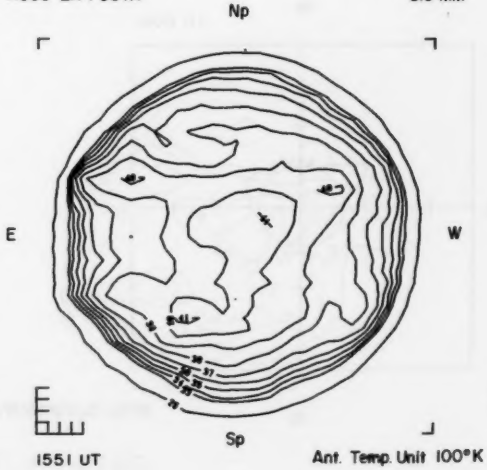
NOSC LA POSTA 2.0 CM



1653 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

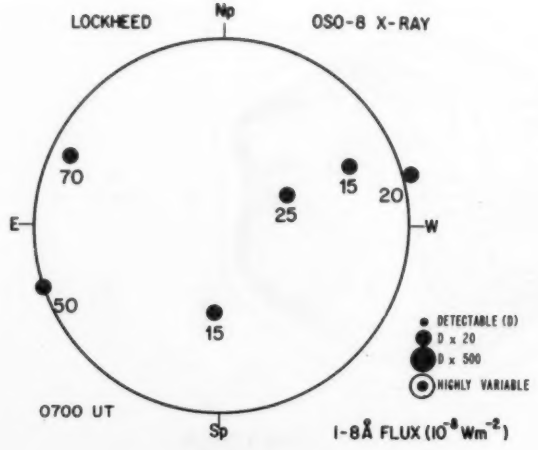


1551 UT

Ant. Temp. Unit 100°K

JUNE 21, 1978 (P = -7.36, B_0 = 1.73, L_0 = 123.92)

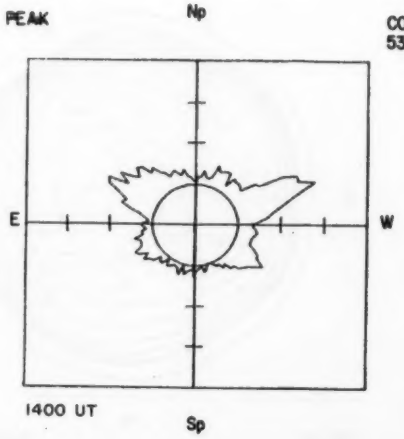
LOCKHEED OSO-8 X-RAY



0700 UT

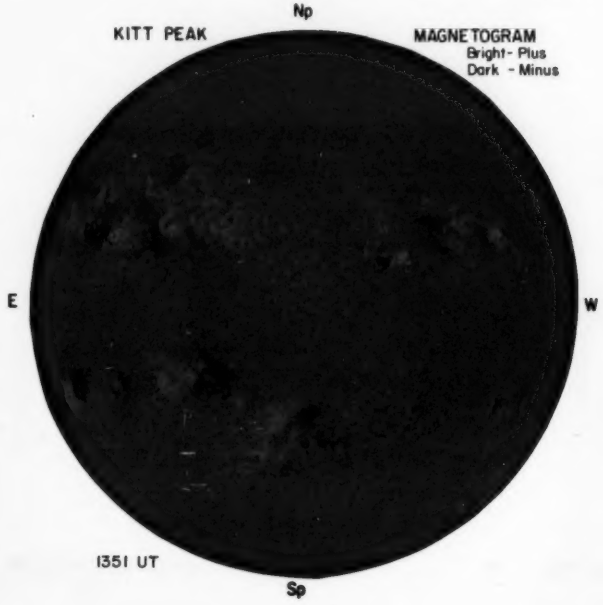
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK



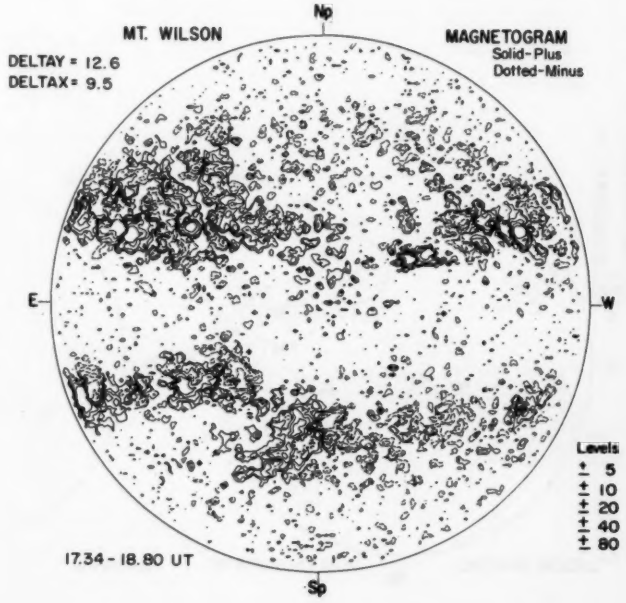
1400 UT

KITT PEAK



1351 UT

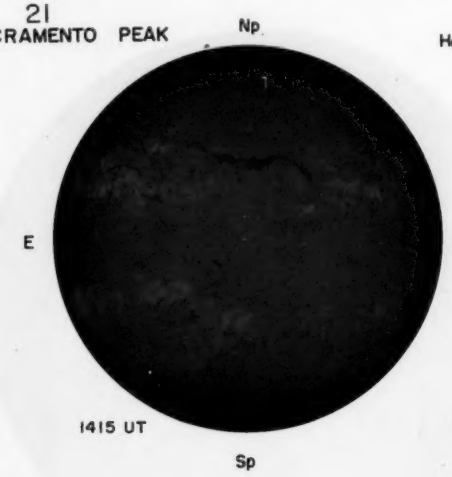
MT. WILSON



17.34 - 18.80 UT

21

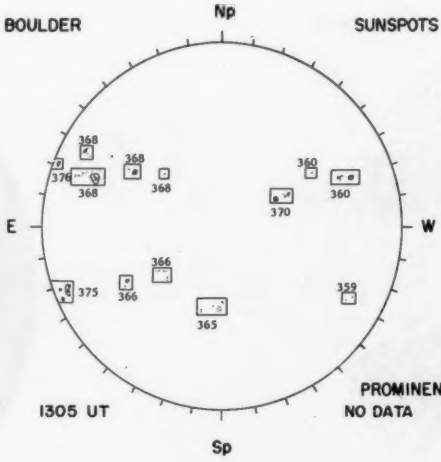
SACRAMENTO PEAK



1415 UT

Hα

BOULDER



1305 UT

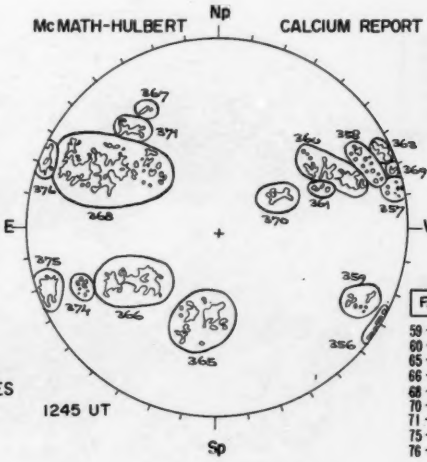
SUNSPOTS

PROMINENCES

NO DATA

McMATH-HULBERT

CALCIUM REPORT

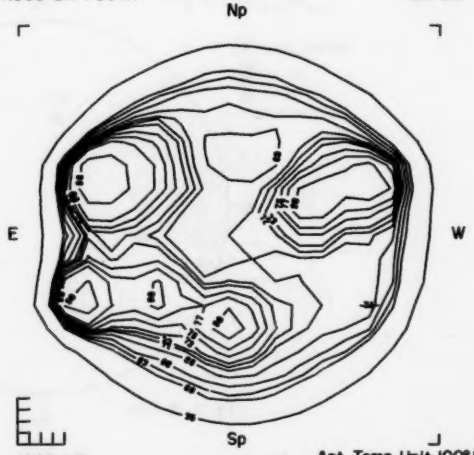


1245 UT

FAIR	S
59 - 0800 - 2.5	
60 - 3500 - 3.0	
65 - 3200 - 2.5	
66 - 3300 - 2.5	
68 - 9000 - 3.0	
70 - 0700 - 3.0	
71 - 1000 - 3.0	
75 - 3700 - 3.5	
76 - 3800 - 3.0	

NOSC LA POSTA

2.0 CM

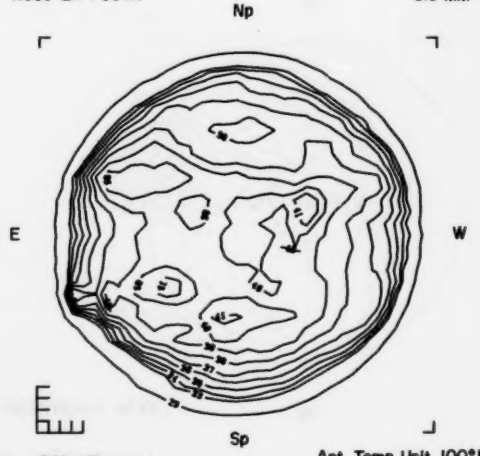


1649 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM



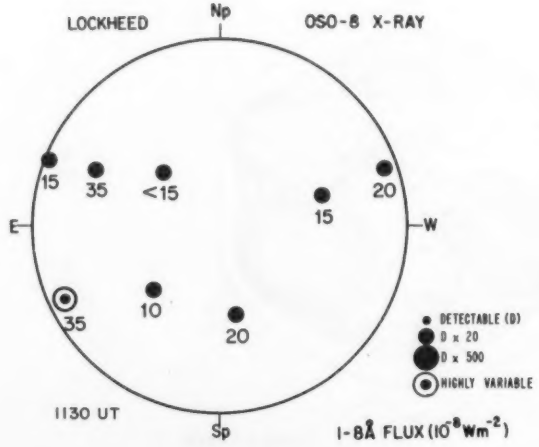
1549 UT

Ant. Temp. Unit 100°K

91
Jun 78

JUNE 22, 1978 (P=-6.91, B_o=1.84, L_o=110.68)

LOCKHEED OSO-8 X-RAY

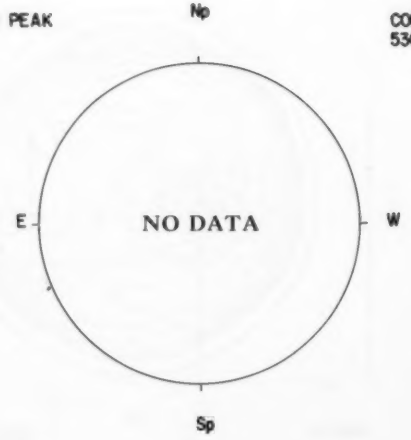


1130 UT

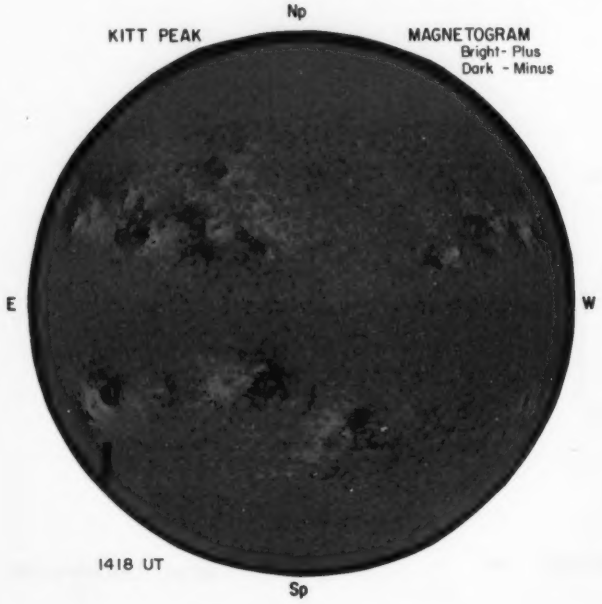
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



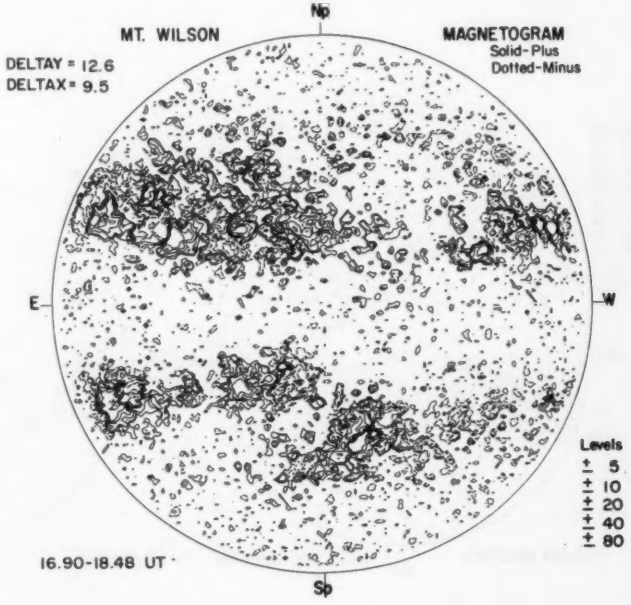
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1418 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

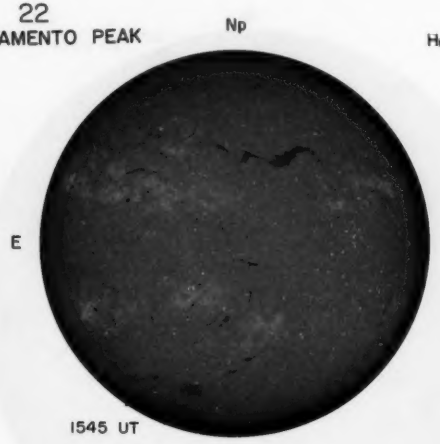
DELTAY = 12.6
DELTAX = 9.5



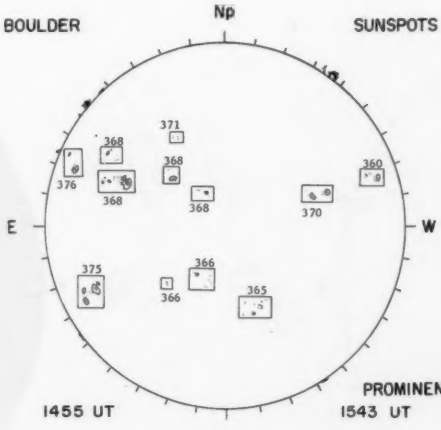
16.90-18.48 UT

22

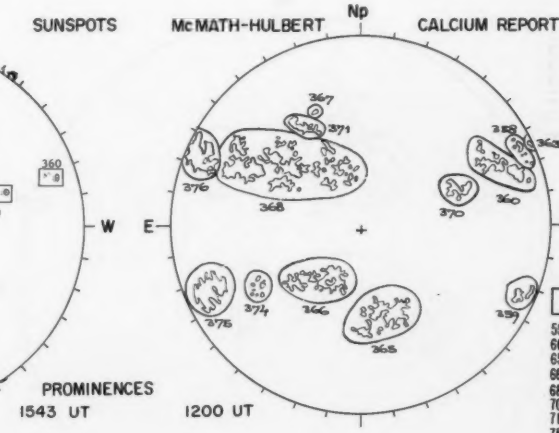
SACRAMENTO PEAK



Hα BOULDER



SUNSPOTS



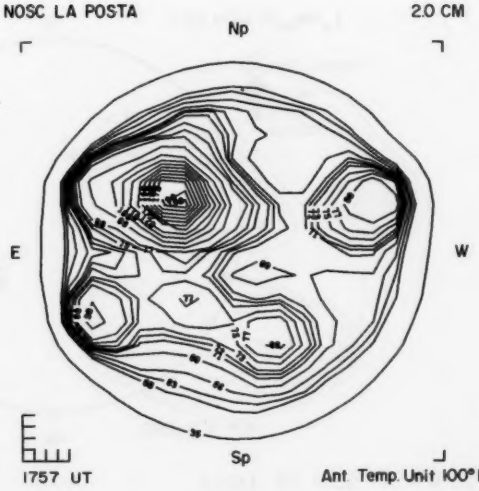
McMATH-HULBERT

CALCIUM REPORT

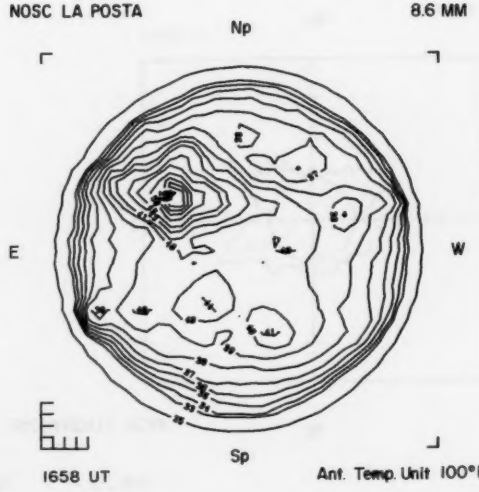
FAIR | M

59 - 0800-2.5
60 - 3100-3.0
65 - 3600-2.5
68 - 3300-2.5
68 - 9000-3.0
70 - 0900-3.0
71 - 1000-3.0
75 - 4300-3.5
76 - 4400-3.5

NOSC LA POSTA 2.0 CM

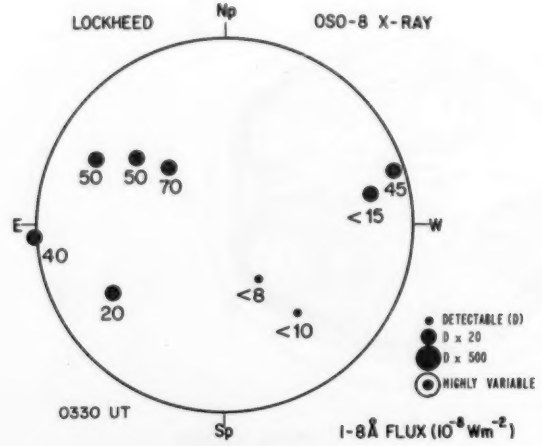


NOSC LA POSTA 8.6 MM



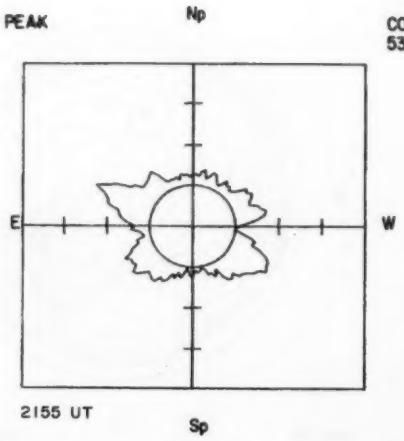
JUNE 23, 1978 (P =-6.47, B_0 =1.96, L_0 = 97.44)

LOCKHEED OSO-8 X-RAY

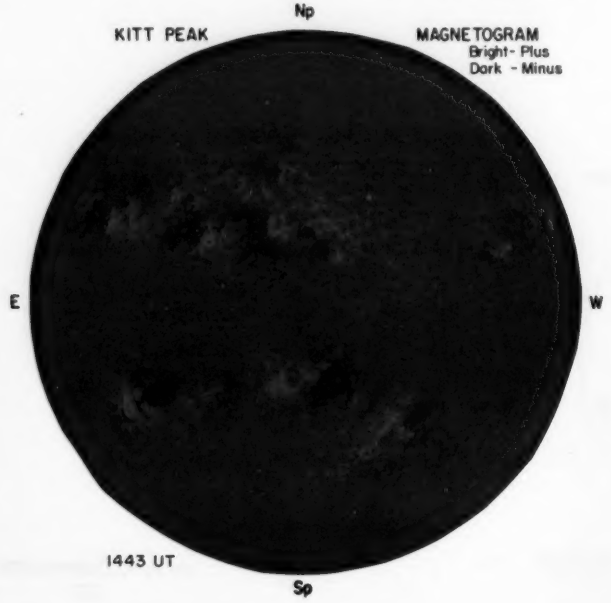


1-8Å FLUX (10^{-6} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å

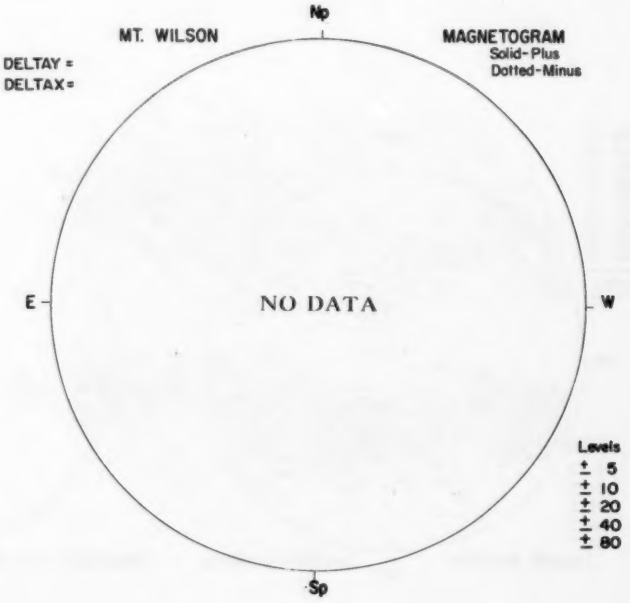


KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



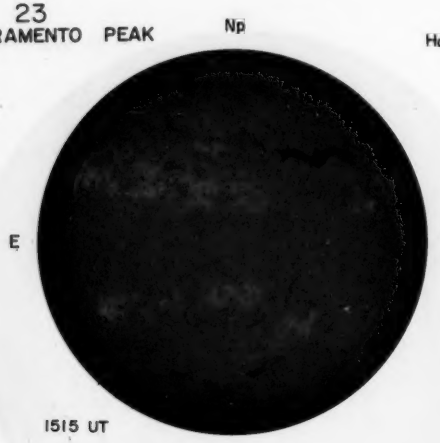
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =



23

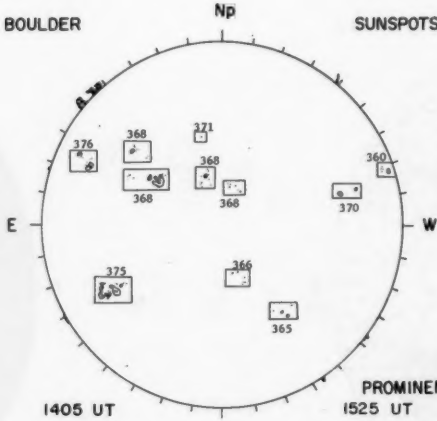
SACRAMENTO PEAK



1515 UT

Hα

BOULDER



1405 UT

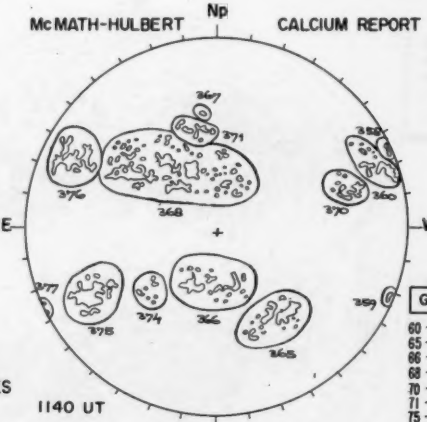
SUNSPOTS

PROMINENCES

1525 UT

McMATH-HULBERT

CALCIUM REPORT

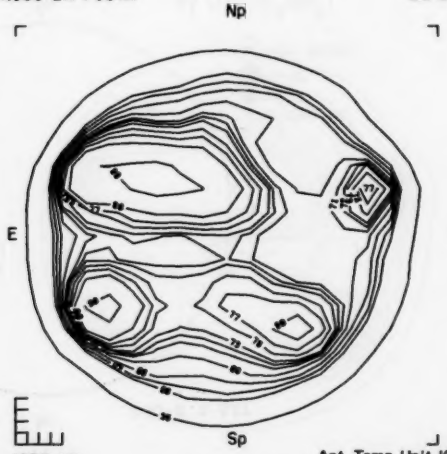


1140 UT

GOOD	D
60 - 3000 - 3.5	
65 - 3200 - 3.5	
66 - 3200 - 2.5	
68 - 8900 - 3.0	
70 - 1200 - 3.0	
71 - 1000 - 3.0	
75 - 4700 - 3.5	
76 - 4000 - 3.5	

NOSC LA POSTA

2.0 CM



1932 UT

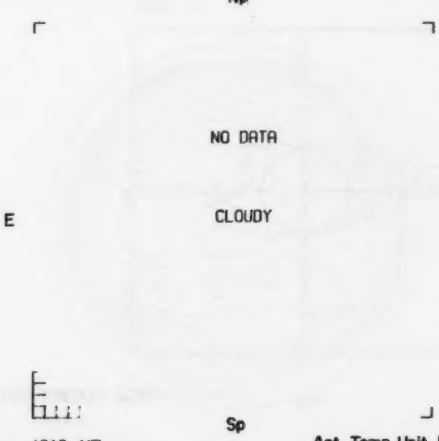
Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM

NO DATA

CLOUDY



1812 UT

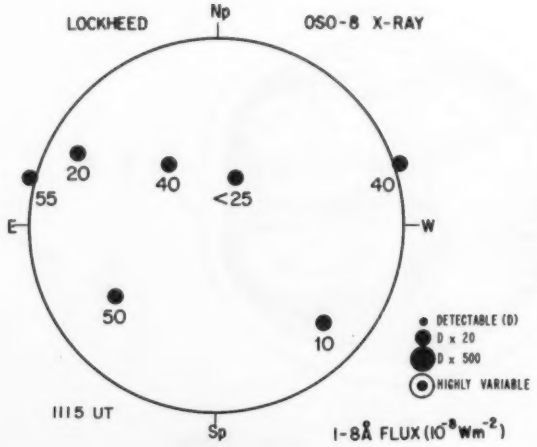
Ant. Temp. Unit 100°K

95

Jun 78

JUNE 24, 1978 (P =-6.02, B_0 =2.08, L_0 = 84.20)

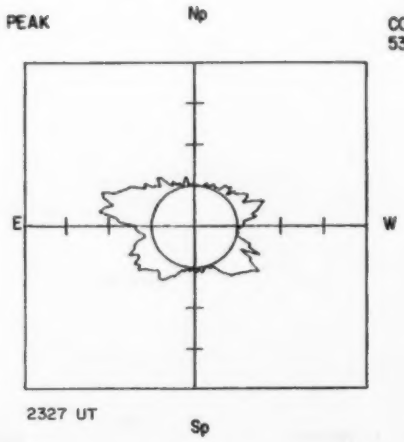
LOCKHEED OSO-8 X-RAY



1115 UT

1-8Å FLUX (10^{-8} Wm^{-2})

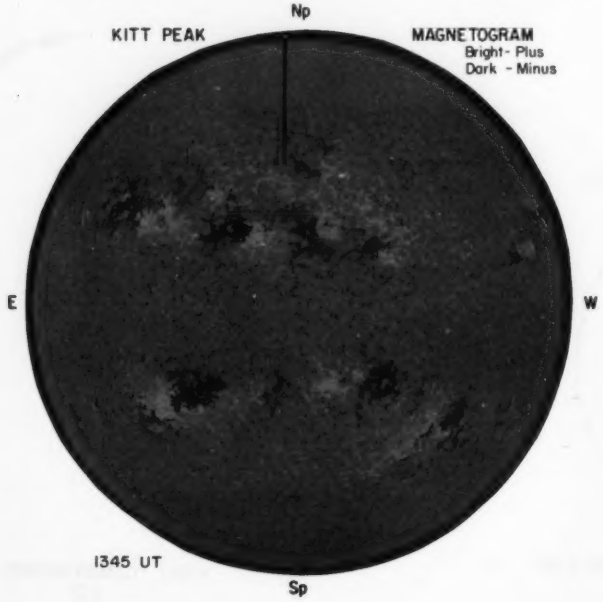
SACRAMENTO PEAK



2327 UT

KITT PEAK MAGNETOGRAM

Bright - Plus
Dark - Minus

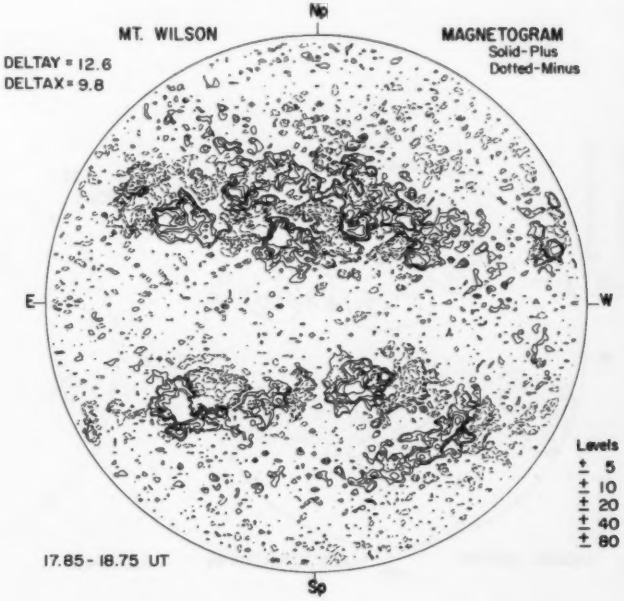


1345 UT

MT. WILSON MAGNETOGRAM

Solid - Plus
Dotted - Minus

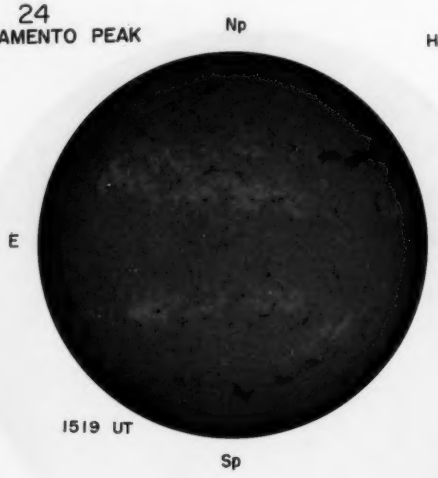
DELTAY = 12.6
DELTAX = 9.8



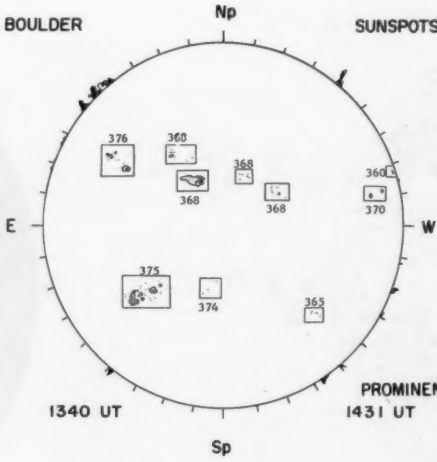
17.85 - 18.75 UT

24

SACRAMENTO PEAK



Hα BOULDER



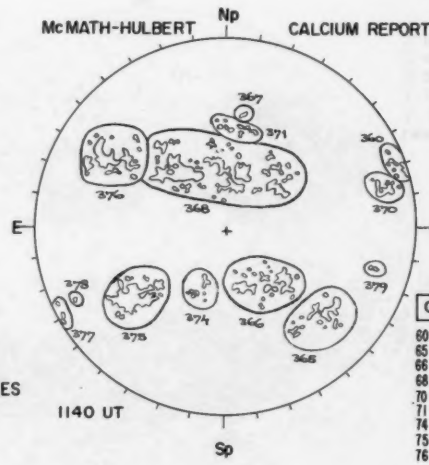
SUNSPOTS

PROMINENCES

1431 UT

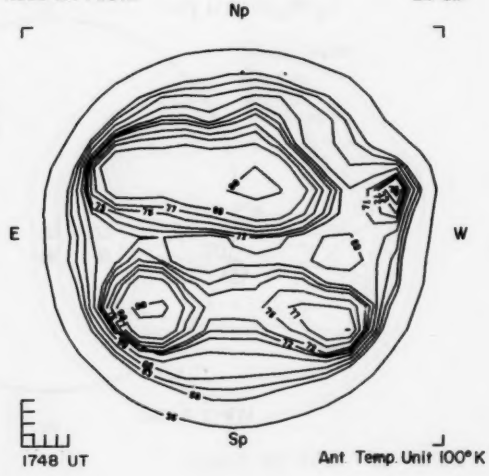
McMATH-HULBERT

CALCIUM REPORT

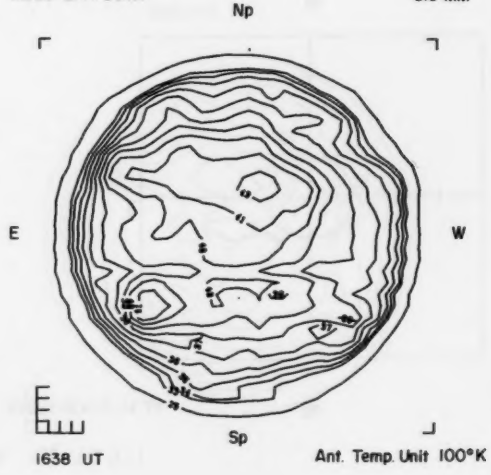


GOOD	D
60 - 2000 - 3.0	
65 - 3200 - 3.0	
66 - 3200 - 2.5	
68 - 8900 - 3.0	
70 - 1300 - 3.0	
71 - 1000 - 2.5	
74 - 0500 - 2.5	
75 - 4600 - 3.5	
76 - 4000 - 3.5	

NOSC LA POSTA 2.0 CM

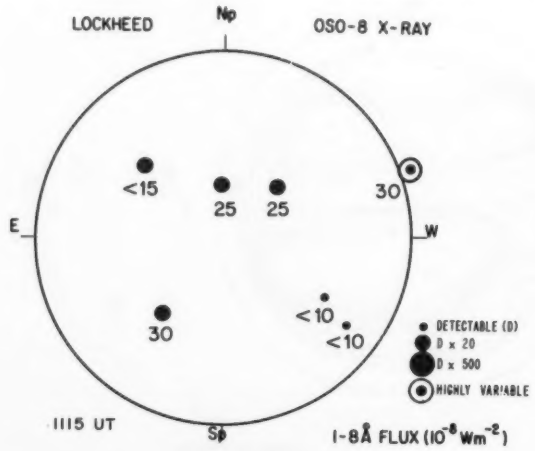


NOSC LA POSTA 8.6 MM



JUNE 25, 1978 (P = -5.57, B_o = 2.19, L_o = 70.97)

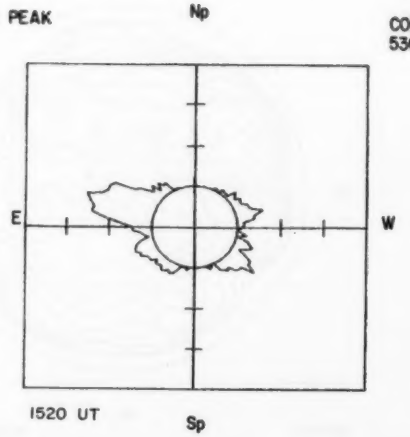
LOCKHEED OSO-8 X-RAY



1115 UT

1-8Å FLUX (10^{-8} Wm^{-2})

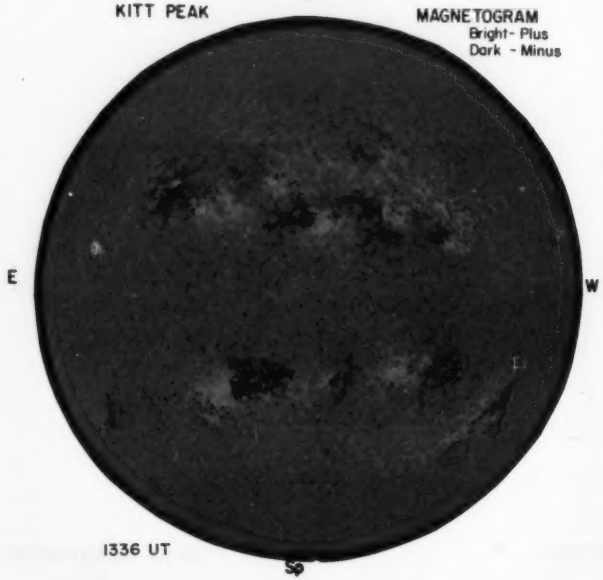
SACRAMENTO PEAK



1520 UT

KITT PEAK MAGNETOGRAM

Bright - Plus
Dark - Minus

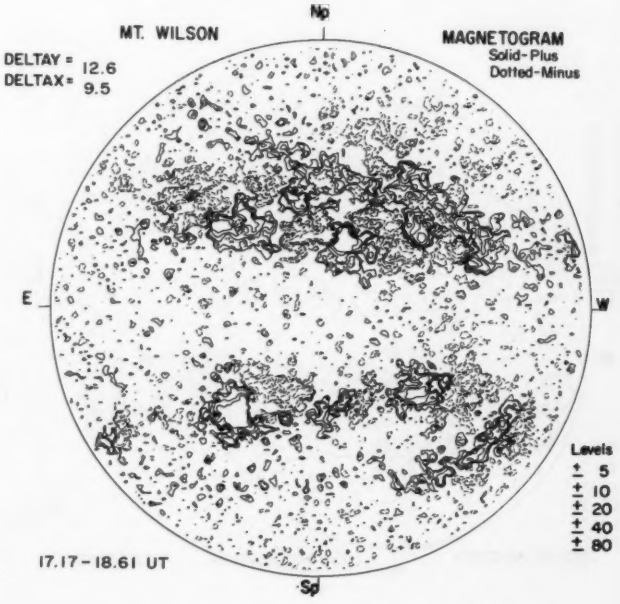


1336 UT

MT. WILSON MAGNETOGRAM

Solid - Plus
Dotted - Minus

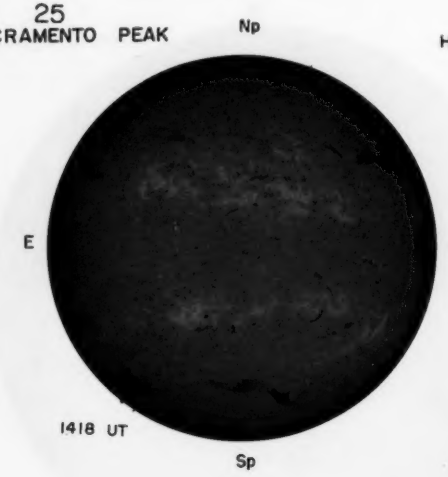
DELTAY = 12.6
DELTAX = 9.5



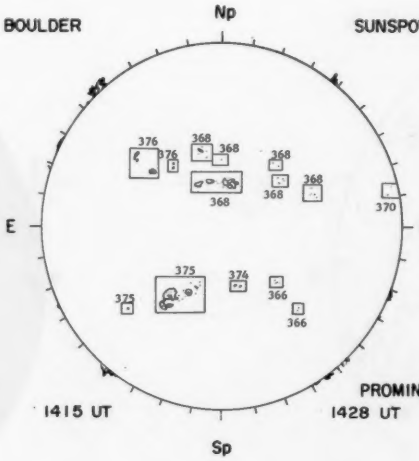
17.17 - 18.61 UT

25

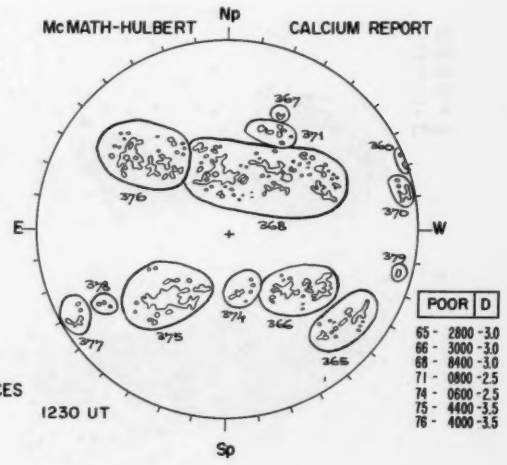
SACRAMENTO PEAK



Hα BOULDER SUNSPOTS

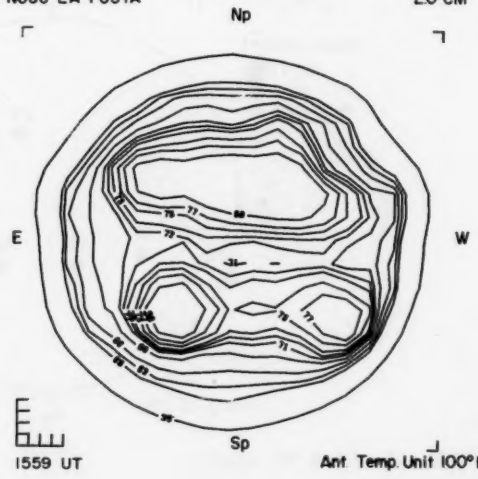


McMATH-HULBERT CALCIUM REPORT

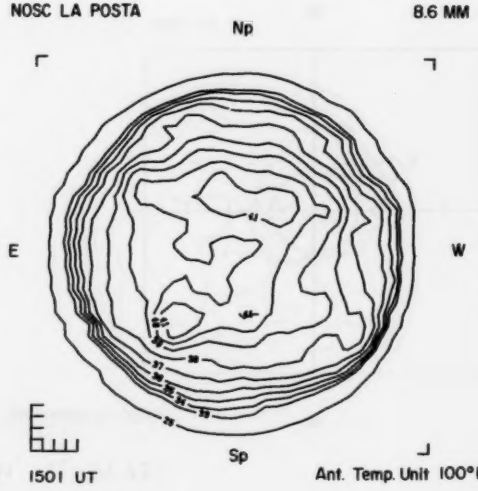


PROMINENCES 1428 UT

NOSC LA POSTA 2.0 CM

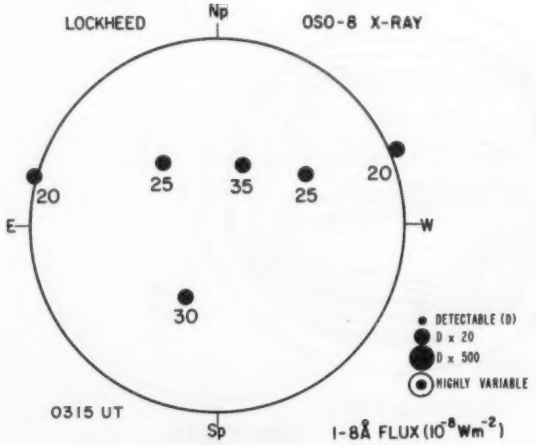


NOSC LA POSTA 8.6 MM



JUNE 26, 1978 (P = -5.12, B_0 = 2.31, L_0 = 57.73)

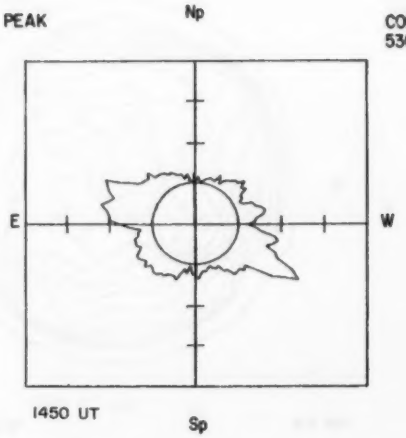
LOCKHEED OSO-8 X-RAY



0315 UT

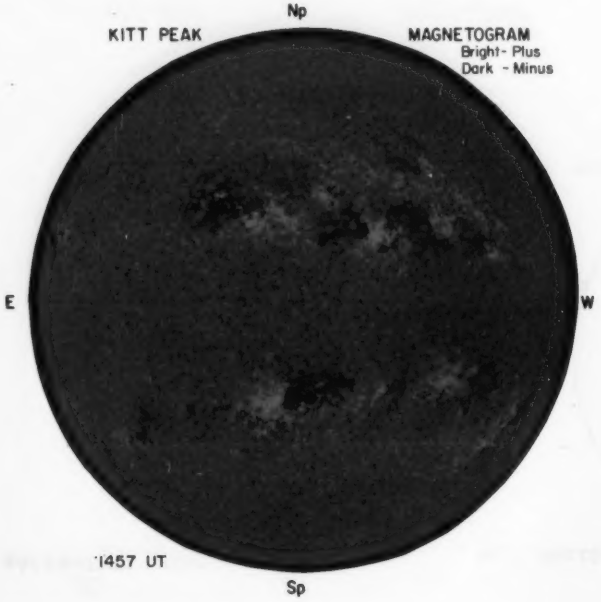
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK



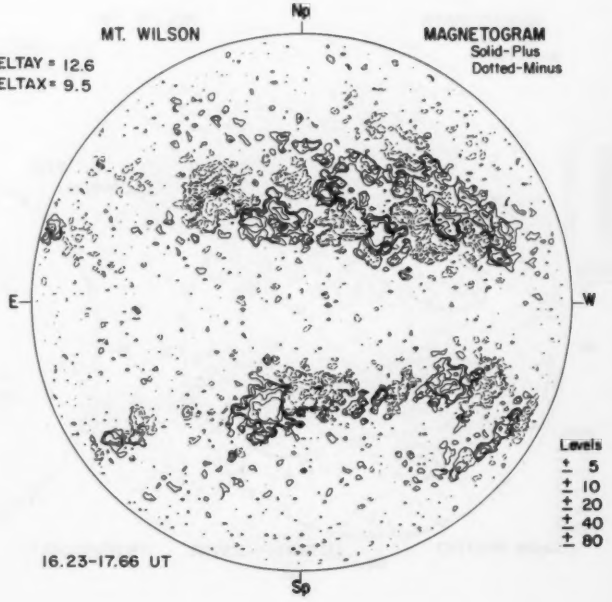
1450 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1457 UT

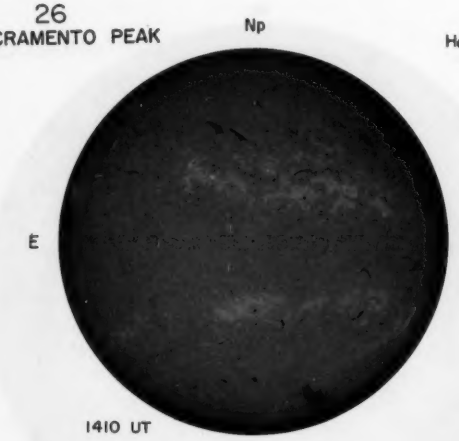
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.5



16.23-17.66 UT

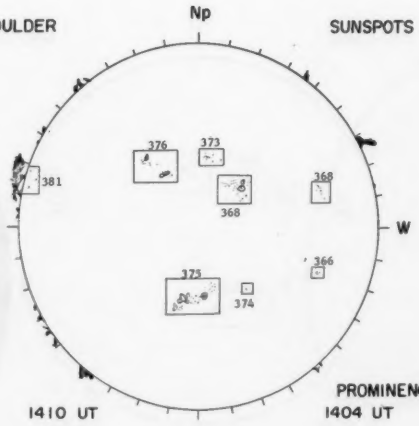
26

SACRAMENTO PEAK Hα



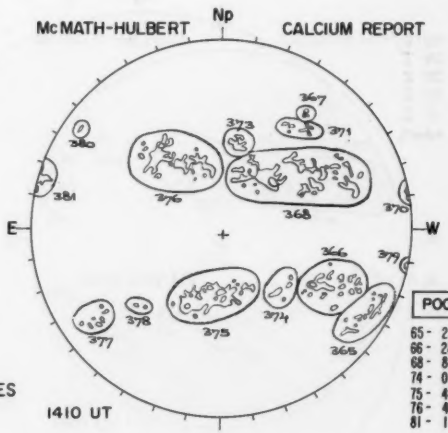
1410 UT

BOULDER SUNSPOTS



1410 UT PROMINENCES 1404 UT

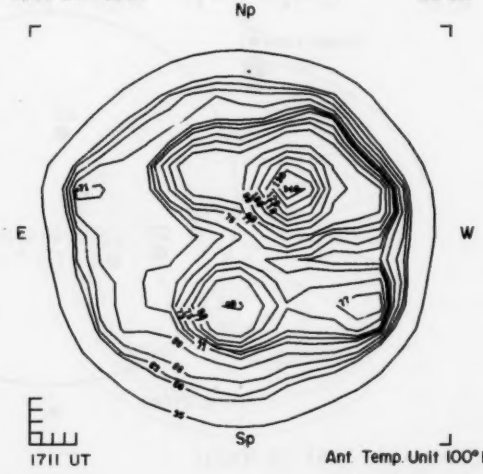
McMATH-HULBERT CALCIUM REPORT



1410 UT

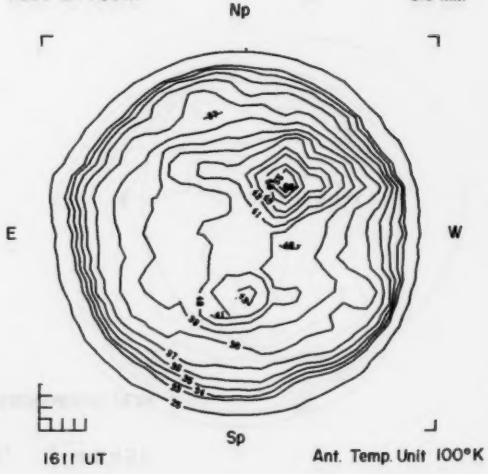
POOR	S
65 -	2500 - 3.5
66 -	2800 - 3.0
68 -	8400 - 3.0
74 -	0600 - 2.5
75 -	4500 - 3.5
76 -	4000 - 3.5
81 -	1700 - 3.5

NOSC LA POSTA 2.0 CM



1711 UT Ant. Temp. Unit 100°K

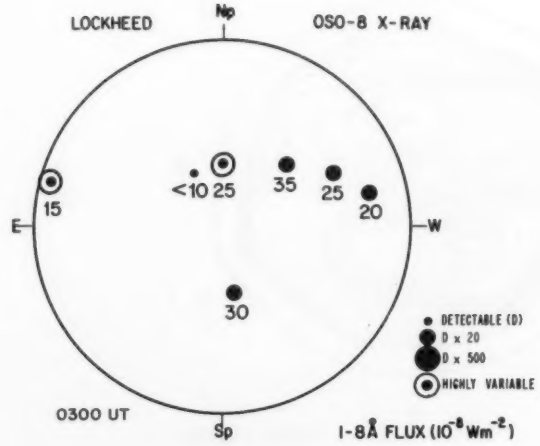
NOSC LA POSTA 8.6 MM



1611 UT Ant. Temp. Unit 100°K

JUNE 27, 1978 (P = -4.67, B_o = 2.42, L_o = 44.49)

LOCKHEED OSO-8 X-RAY

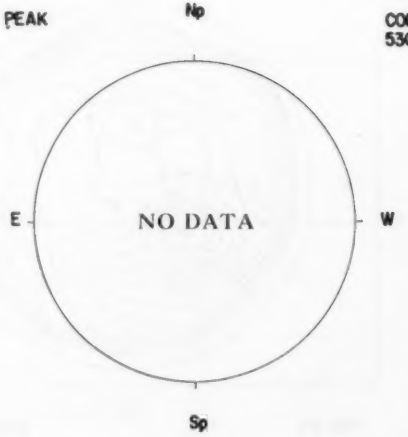


0300 UT

1-8Å FLUX (10^{-8} Wm^{-2})

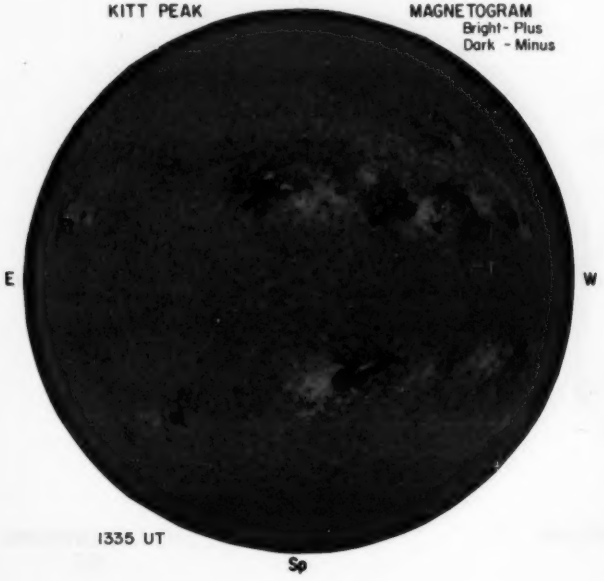
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

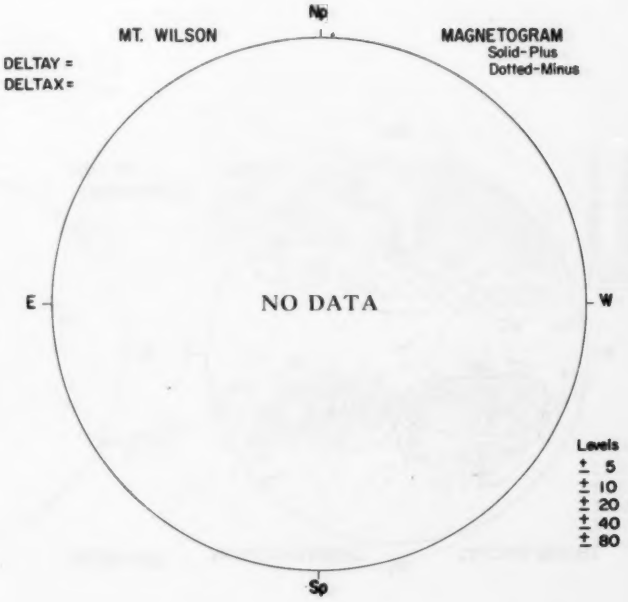


1335 UT

MT. WILSON

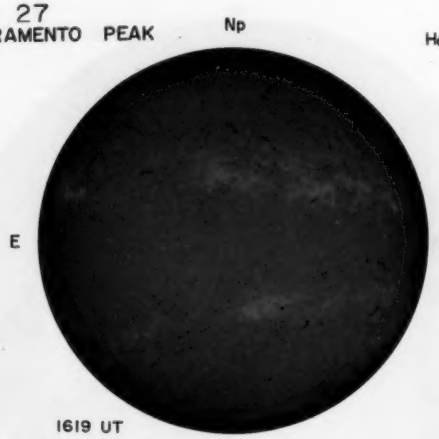
MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =



27

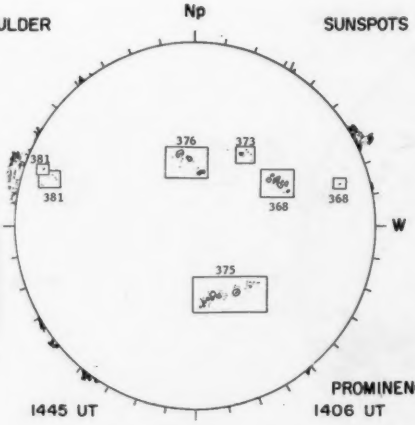
SACRAMENTO PEAK



1619 UT

Hα

BOULDER



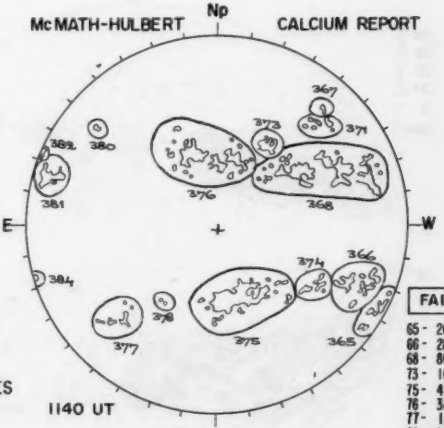
1445 UT

SUNSPOTS

PROMINENCES

1406 UT

McMATH-HULBERT



1140 UT

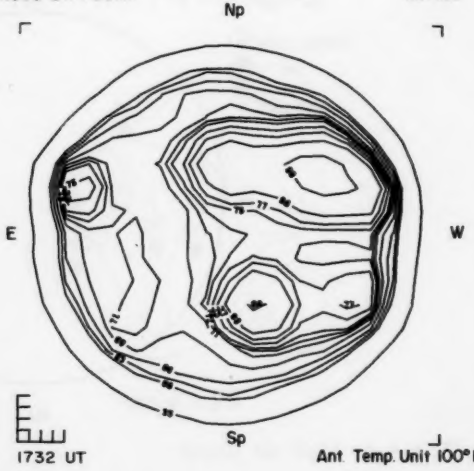
CALCIUM REPORT

FAIR	D

65 - 2000 - 2.5
66 - 2800 - 3.0
68 - 8000 - 3.5
73 - 1000 - 2.5
75 - 4500 - 3.5
76 - 3800 - 3.0
77 - 1200 - 2.5
80 - 0200 - 2.5
81 - 3000 - 3.5
82 - 0500 - 2.5

NOSC LA POSTA

2.0 CM

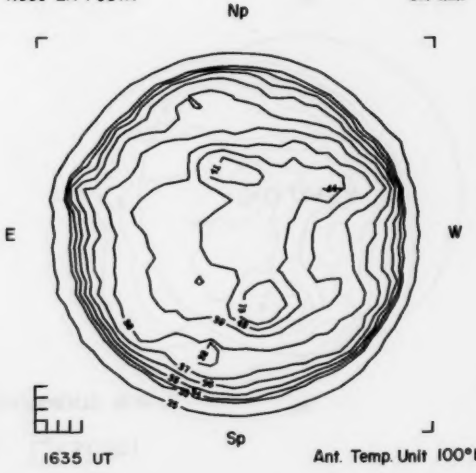


1732 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM

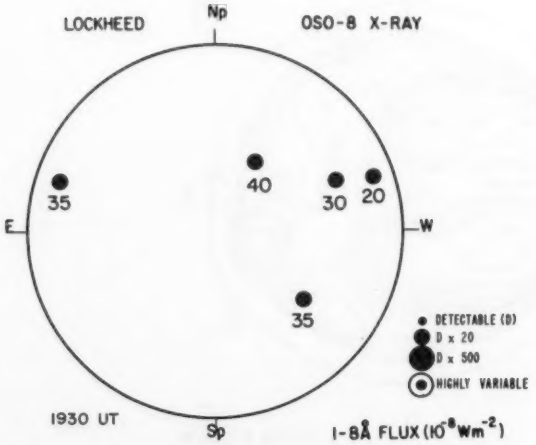


1635 UT

Ant. Temp. Unit 100°K

JUNE 28, 1978 (P = -4.22, B_0 = 2.53, L_0 = 31.26)

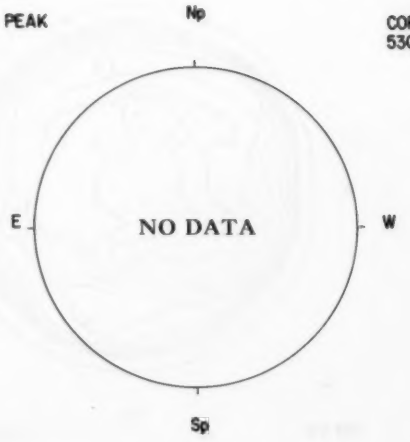
LOCKHEED OSO-8 X-RAY



1930 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å

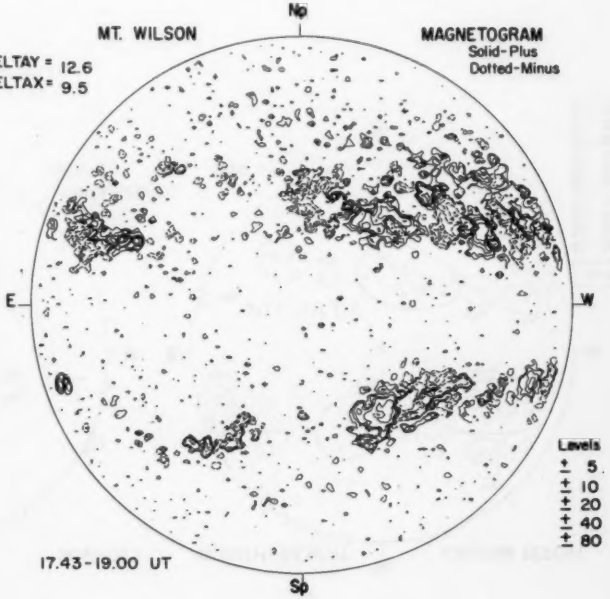


KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

1622 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

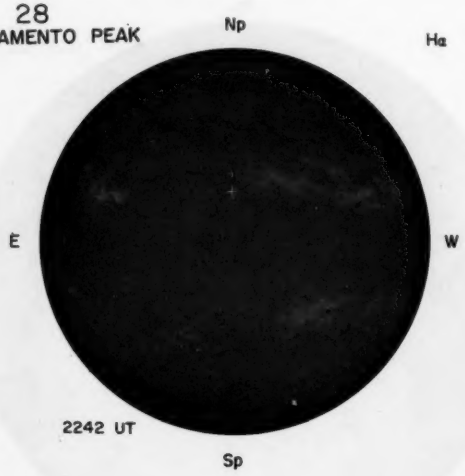
DELTAY = 12.6
DELTAX = 9.5



17.43 - 19.00 UT

28

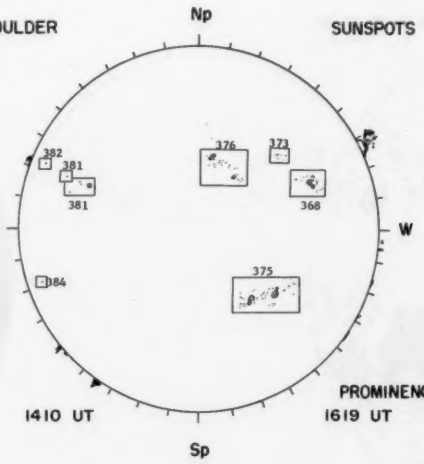
SACRAMENTO PEAK



Hα

2242 UT

BOULDER



1410 UT

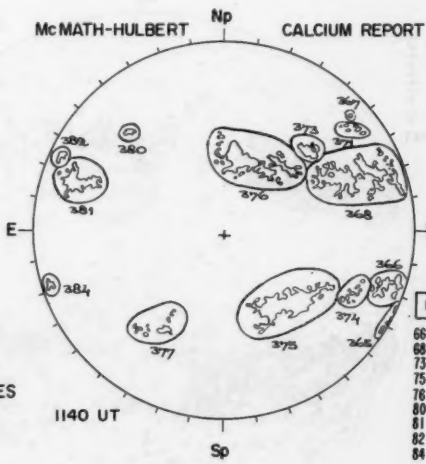
SUNSPOTS

PROMINENCES

1619 UT

McMATH-HULBERT

CALCIUM REPORT

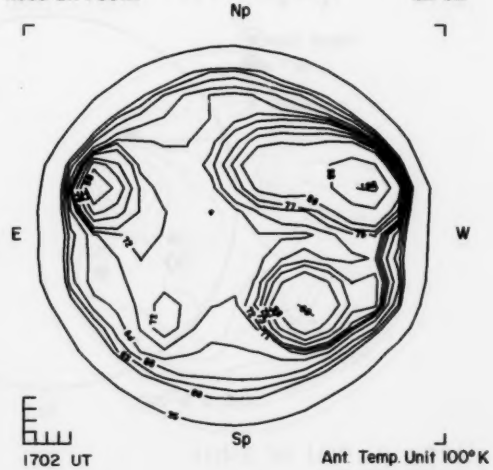


1140 UT

FAIR	S
66 -	2300 - 2.5
68 -	7500 - 3.5
73 -	1000 - 3.0
75 -	5000 - 3.0
76 -	4000 - 3.5
80 -	0400 - 3.0
81 -	2800 - 3.5
82 -	0600 - 3.5
84 -	0600 - 3.5

NOSC LA POSTA

2.0 CM

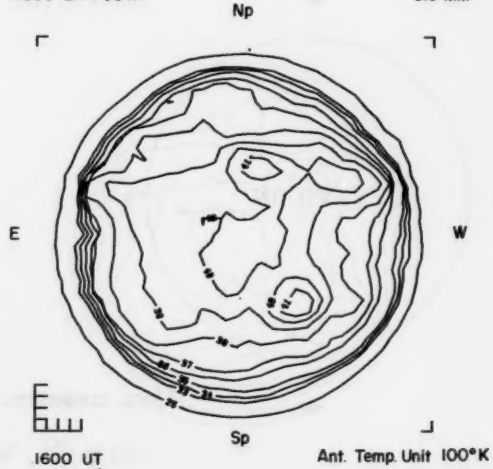


1702 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

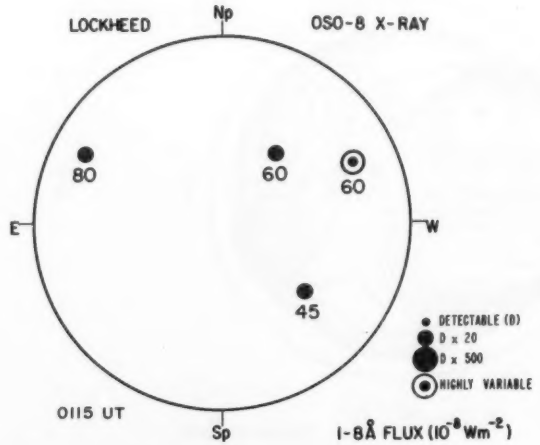
8.6 MM

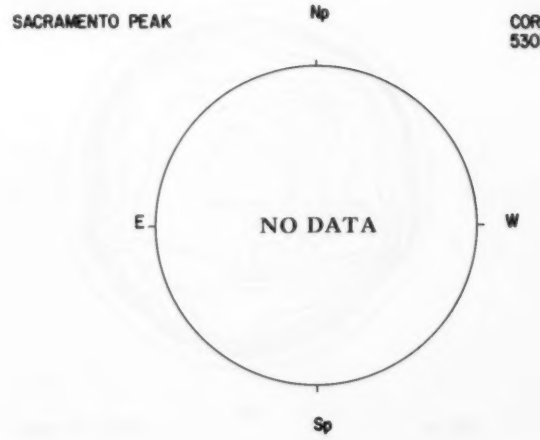


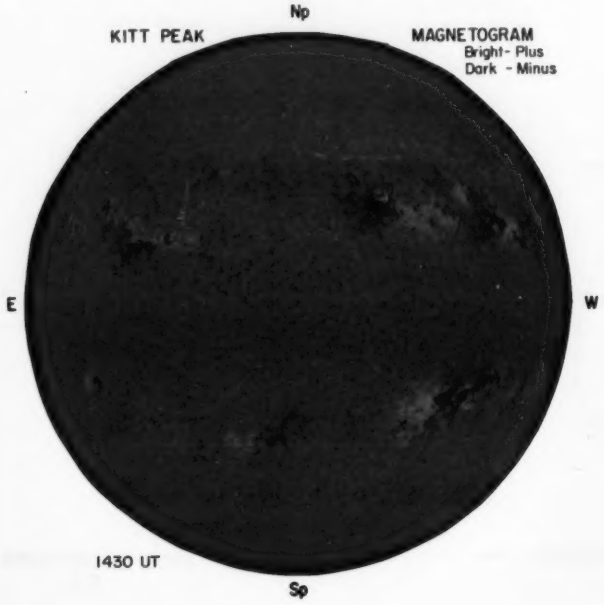
1600 UT

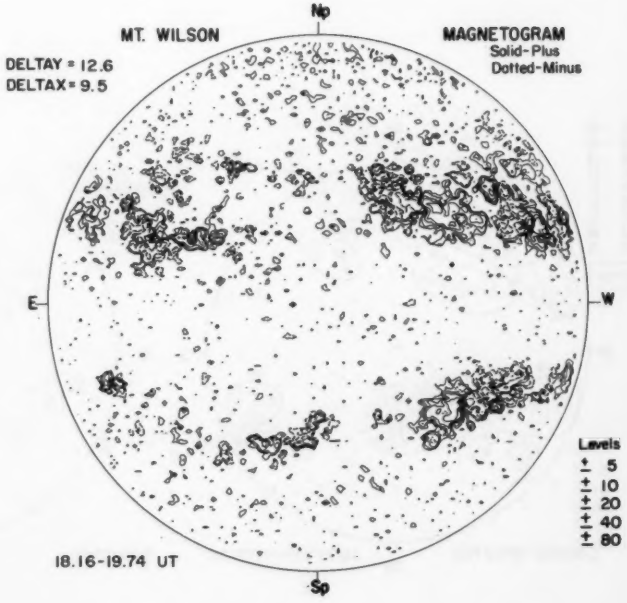
Ant. Temp. Unit 100°K

JUNE 29, 1978 (P=-3.77, B_0=2.64, L_o=18.02)



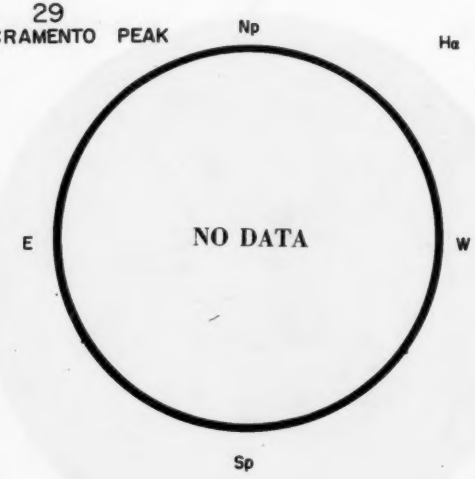




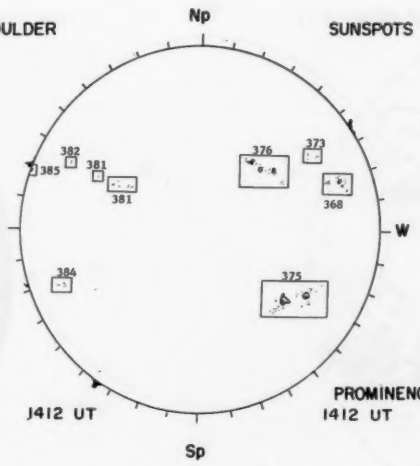


29

SACRAMENTO PEAK

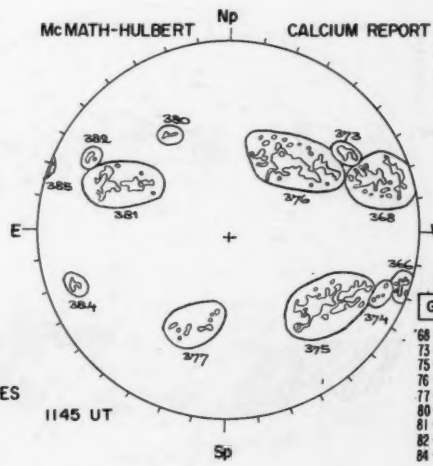


Hα BOULDER



1412 UT

SUNSPOTS



1412 UT

PROMINENCES

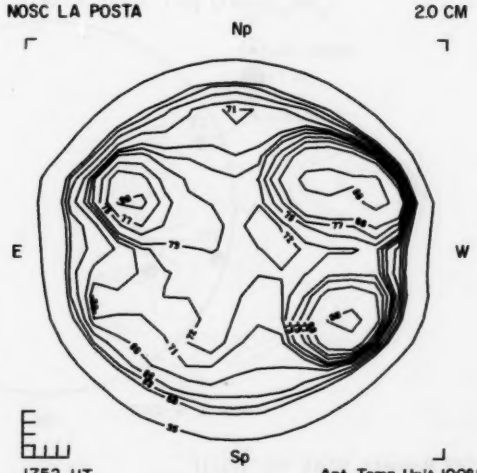
McMATH-HULBERT

1145 UT

CALCIUM REPORT

GOOD	S
'68 - 6500	-3.5
73 - 1000	-3.0
75 - 5200	-3.5
76 - 4500	-3.5
77 - 1200	-2.5
80 - 0300	-2.5
81 - 3000	-3.5
82 - 0500	-2.5
84 - 0800	-3.5

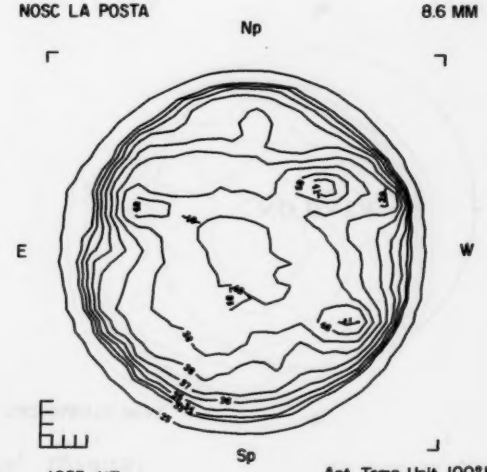
NOSC LA POSTA 2.0 CM



1752 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

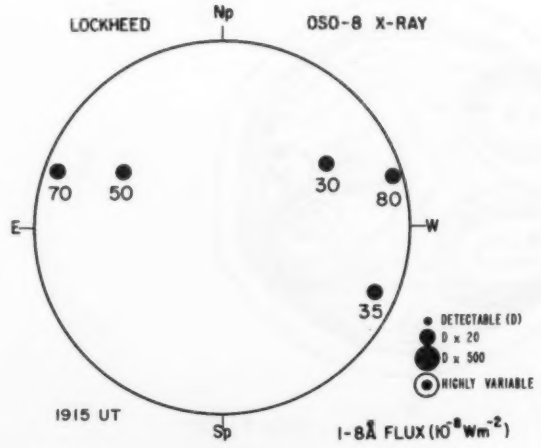


1653 UT

Ant. Temp. Unit 100°K

JUNE 30, 1978 (P =-3.31, B_o = 2.76, L_o = 4.78)

LOCKHEED OSO-8 X-RAY

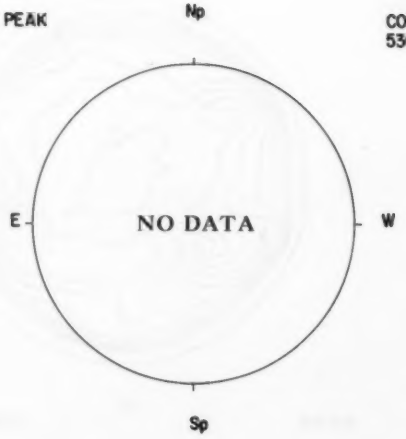


1915 UT

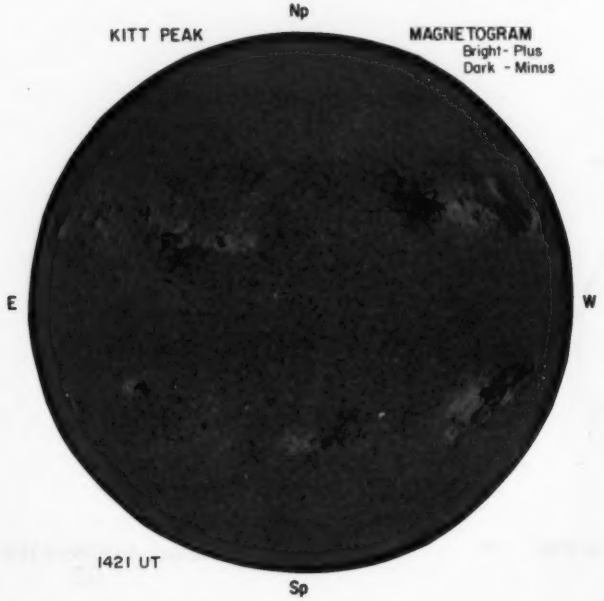
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



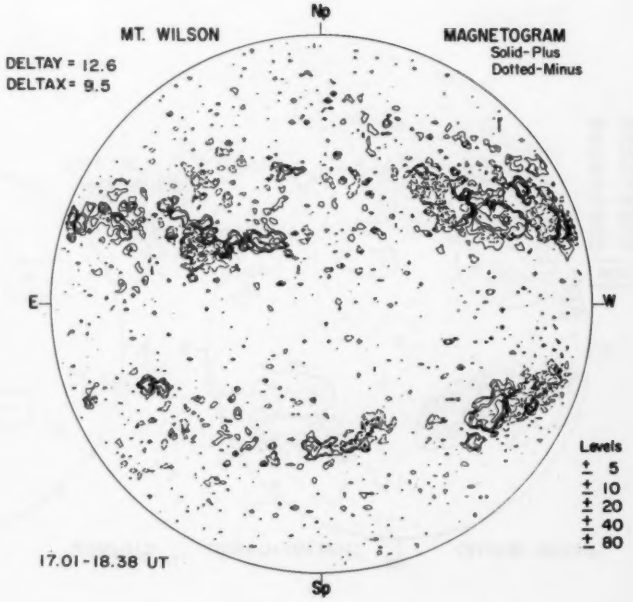
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1421 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.6
DELTAX = 9.5



17.01 - 18.38 UT

30

SACRAMENTO PEAK

Np

Hα

E W

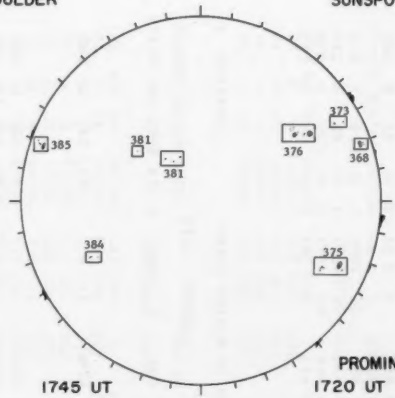
Sp

1402 UT

BOULDER

Np

SUNSPOTS



E W

Sp

1745 UT

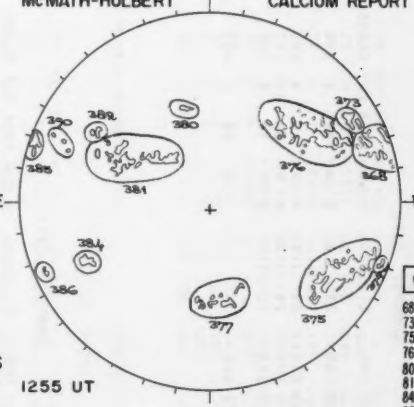
PROMINENCES

1720 UT

McMATH-HULBERT

Np

CALCIUM REPORT



E W

Sp

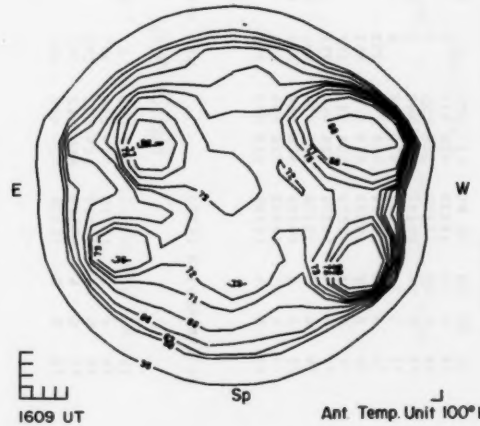
1255 UT

GOOD	S
68 - 5000 - 3.5	
73 - 1200 - 3.0	
75 - 5800 - 3.5	
76 - 5000 - 3.5	
80 - 0300 - 2.5	
81 - 3400 - 3.0	
84 - 0900 - 3.5	
85 - 1600 - 3.5	
86 - 0400 - 2.5	

NOSC LA POSTA

2.0 CM

Np



E W

Sp

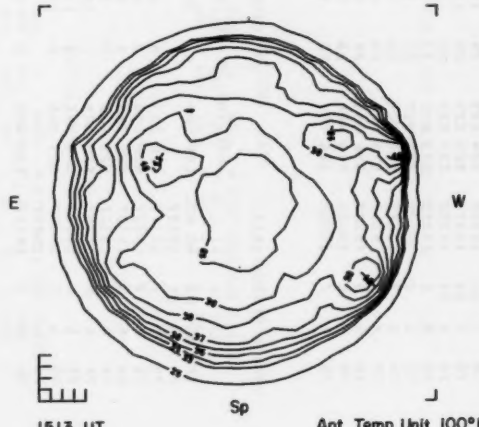
1609 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM

Np



E W

Sp

1513 UT

Ant. Temp. Unit 100°K

REGIONS OF SOLAR ACTIVITY

JUNE 1978

MCMATH REGION 15322 CMP DATE 1.0

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	5	26	15322	S24 E78	25	800	2.5									
78	5	27	15322	S23 E65	24	700	2.5	20054	S23 E65	23	X	1	B	10	2	BXO
78	5	28	15322	S24 E52	24	900	2.5									
78	5	29	15322	S24 E39	24	1100	2.0	20056	S23 E36	26	(B)	4	B	10	4	BXO
78	5	30	15322	S23 E24	26	1000	2.0	20056	S24 E24	24	(B)	4	R	60	14	CRI
78	5	31	15322	S23 E11	26	700	2.5	20056	S25 E13	22	(AF)	3	R	30	8	CRO
78	6	1	15322	S23 W02	23	700	2.0									
78	6	2	15322	S23 W17	25	700	2.0		S22 W14				H	10	1	HRX
78	6	3	15322	S23 W29	24	600	2.0									
78	6	4	15322	S23 W40	23	600	2.5									
78	6	5	15322	S24 W53	23	800	2.5									
78	6	6	15322	S24 W66	23	900	2.8									
78	6	7	15322	S24 W84	22	400	1.0									

MCMATH REGION 15337 CMP DATE 2.5

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	01	15337					20061	S24 E25	10	(AP)	2				
78	6	1	15337	S26 E13	8	300	2.0	20061	S25 E11	9	(AP)	3				
78	6	2	15337	S25 E00	8	300	2.0	20061	S25 W02	8	(B)	3				
78	6	3	15337	S25 W13	8	400	2.5	20061	S25 W14	8	(B)	3	H	30	8	DRO
78	6	4	15337	S25 W25	8	700	3.0	20061	S25 W27	8	(B)	4				
78	6	5	15337	S25 W38	8	1200	3.0	20061	S25 W43	11	(BP)	4	H	120	11	CSO
78	6	6	15337	S25 W51	8	1300	3.0	20061	S25 W55	10	(BP)	4	B	80	8	CAO
78	6	7	15337	S25 W68	6	1300	3.5	20061	S24 W68	10	(BP)	3	B	200	7	DSO
78	6	8	15337					20061	S26 W79	7	BF)	3	B	90	2	ESO
78	6	9	15337	S25 W90	7	500	2.5									

MCMATH REGION 15330 CMP DATE 3.4 RETURN OF REGION 15280 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	5	28	15330	S28 E72	4	400	1.0									
78	5	29	15330	S28 E59	4	800	2.0									
78	5	30	15330	S28 E49	1	1200	3.5									
78	5	31	15330	S28 E37	0	1000	2.0		S27 E24				R	10	4	BXO
78	6	1	15330	S28 E24	358	900	1.5									
78	6	2	15330	S28 E12	357	800	2.0									
78	6	3	15330	S28 W01	357	700	2.0									
78	6	4	15330	S28 W14	357	1000	2.5		S27 W19				H	50	8	DRO
78	6	5	15330	S28 W26	356	1300	2.0		S27 W32				H	80	20	DAI
78	6	6	15330	S28 W40	357	1000	2.0									
78	6	7	15330	S28 W58	356	600	1.5									
78	6	9	15330	S28 W79	356	400	1.0									

MCMATH REGION 15339 CMP DATE 3.6

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	2	15339	N14 E14	355	200	1.5	20062	N14 E13	354	(AP)	3				
78	6	3	15339	N14 E01	355	200	2.0									
78	6	4	15339	N14 W12	355	300	2.0									
78	6	5	15339	N14 W24	354	400	1.0									

MCMATH REGION 15341 CMP DATE 4.8

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	2	15341	S22 E30	339	200	1.5	20063	S22 E28	339		3				
78	6	3	15341	S22 E16	340	300	2.5	20063	S21 E14	341	(B)	3	H	10	3	BXO
78	6	4	15341	S22 E04	339	500	3.0	20063	S21 E00	341	(AP)	3	H	20	5	DRO
78	6	5	15341	S22 W10	340	500	2.5	20063	S22 W13	341	(AP)	2	H	20	3	CRO
78	6	6	15341	S22 W23	340	400	2.5	20063	S20 W25	340	(AF)	2				
78	6	7	15341	S21 W41	339	400	2.0	20063	S19 W38	340	(AF)	1	B	0	1	AXX
78	6	9	15341	S21 W63	340	300	2.0									
78	6	10	15341	S22 W75	339	300	1.0									

REGIONS OF SOLAR ACTIVITY

JUNE 1978

MCMATH REGION 15333 CMP DATE 5.0 RETURN OF REGION 15299 ROTATION 2

			CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	5	29	15333	N17 E85	339	1200	2.5									
78	5	30	15333	N17 E72	339	1800	3.5									
78	5	31	15333	N17 E57	341	1600	2.5									
78	6	1	15333	N17 E45	337	1600	2.5									
78	6	2	15333	N17 E30	339	1200	2.0									
78	6	3	15333	N17 E18	338	800	2.0									
78	6	4	15333	N18 E07	336	1100	2.0									
78	6	5	15333	N19 W07	337	1200	2.0	20065	N14 E01	327	(AF)	1	N	10	2	BXO
78	6	6	15333	N19 W20	337	700	1.5									
78	6	7	15333	N20 W40	338	700	1.5									
78	6	9	15333	N20 W62	339	700	1.5									
78	6	10	15333	N20 W75	339	600	1.0									

MCMATH REGION 15349 CMP DATE 5.0

			CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	7	15349	S15 W38	336	300	2.5	20066	S14 W36	338	(AP)	3	B	10	3	BXO
78	6	8	15349					20066	S16 W51	339	(AP)	2	B	10	1	AXX
78	6	9	15349	S14 W60	337	200	2.0									
78	6	10	15349	S15 W74	338	200	1.5									

MCMATH REGION 15355 CMP DATE 5.4

			CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	9	15355	N15 W54	331	300	3.0	20069	N13 W56	331	(AP)	2	B	10	1	AXX
78	6	10	15355	N14 W67	331	400	3.0	20069	N15 W70	332	AP	1	B	0	1	AXX
78	6	11	15355	N15 W80	331	400	2.5									
78	6	12	15355	N16 W90	327	200	1.5									

MCMATH REGION 15336 CMP DATE 6.2 RETURN OF REGION 15295 ROTATION 2

			CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	5	31	15336	S15 E76	322	500	1.0									
78	6	1	15336	S16 E63	319	500	1.5									
78	6	2	15336	S15 E49	320	500	1.0									
78	6	3	15336	S16 E36	320	600	1.0									
78	6	4	15336	S14 E22	321	500	1.0									
78	6	5	15336	S15 E09	321	600	1.0									
78	6	6	15336	S14 W04	321	300	1.5									
78	6	7	15336	S14 W22	320	300	1.5									
78	6	9	15336	S15 W43	320	300	1.0									
78	6	10	15336	S16 W56	320	300	1.0									

MCMATH REGION 15347 CMP DATE 6.6

			CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	6	15347	S28 E02	315	100	1.0									
78	6	7	15347	S29 W15	313	100	1.0									
78	6	9	15347	S29 W37	314	100	1.0									
78	6	10	15347	S29 W50	314	100	1.0									

MCMATH REGION 15350 CMP DATE 7.1

			CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	7	15350	S01 W18	308	100	2.0									

REGIONS OF SOLAR ACTIVITY

JUNE 1978

MCMATH REGION 15351 CMP DATE 7.3

				CALCIUM		PLAGE	DATA			SUNSPOT	DATA					
YR	MO	DA	MC NO.	LAT CMD		L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	7	15351	N12 W08		306	300	2.5									
78	6	8	15351							N12 W19				B	0	1	AXX
78	6	9	15351	N12 W30		307	300	1.5									
78	6	10	15351	N12 W44		308	200	1.5									

MCMATH REGION 15338 CMP DATE 7.7 RETURN OF PART OF REGION 15291 ROTATION 3 & 4

				CALCIUM		PLAGE	DATA			SUNSPOT	DATA					
YR	MO	DA	MC NO.	LAT CMD		L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	1	15338	N18 E80		302	600	1.0									
78	6	2	15338	N18 E67		302	1500	2.0									
78	6	3	15338	N19 E55		301	1500	2.0									
78	6	4	15338	N20 E41		302	1700	2.5									
78	6	5	15338	N20 E29		301	1900	2.0		N19 E38			H		20	1	HRX
78	6	6	15338	N20 E15		302	1300	2.0									
78	6	7	15338	N20 W03		301	1200	2.0									
78	6	9	15338	N20 W24		301	1200	2.0									
78	6	10	15338	N20 W38		302	1000	2.0									
78	6	11	15338	N20 W50		301	1400	2.0									
78	6	12	15338	N20 W62		299	1200	2.0									
78	6	13	15338	N20 W75		298	800	1.5									

MCMATH REGION 15342 CMP DATE 8.9 RETURN OF PART OF REGION 15291 ROTATION 4

				CALCIUM		PLAGE	DATA			SUNSPOT	DATA					
YR	MO	DA	MC NO.	LAT CMD		L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	2	15342	N17 E90		279	500	2.0									
78	6	3	15342	N17 E75		281	600	2.0	20064	N18 E69	286	(AP)	3	H	30	1	HSX
78	6	4	15342	N17 E62		281	1200	2.0	20064	N18 E55	286	(AP)	3	H	20	1	HRX
78	6	5	15342	N17 E50		280	900	2.0	20064	N18 E41	287	(AP)	4	H	10	1	HRX
78	6	6	15342	N17 E36		281	700	2.5	20064	N18 E28	287	(AP)	4	B	10	1	AXX
78	6	7	15342	N17 E16		282	500	2.0	20064	N17 E17	285	(AP)	3	B	10	1	AXX
78	6	8	15342						20064	N18 E02	286	(AP)	3	B	0	1	AXX
78	6	9	15342	N17 W07		284	500	2.0									
78	6	10	15342	N17 W21		285	500	2.0									
78	6	11	15342	N17 W33		284	400	2.0	20071	N20 W37	285	(AP)	1	R	10	1	AXX
78	6	12	15342	N20 W48		285	300	2.0									
78	6	13	15342	N20 W62		285	300	2.0									
78	6	14	15342	N21 W74		285	200	1.0									

MCMATH REGION 15344 CMP DATE 10.5 RETURN OF REGION 15294 ROTATION 3

				CALCIUM		PLAGE	DATA			SUNSPOT	DATA					
YR	MO	DA	MC NO.	LAT CMD		L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	4	15344	N18 E80		263	1000	1.5									
78	6	5	15344	N17 E67		263	1100	2.5		N19 E63			H		20	1	HRX
78	6	6	15344	N18 E52		265	1000	3.0									
78	6	7	15344	N18 E34		264	800	3.0									
78	6	9	15344	N18 E13		264	800	2.5									
78	6	10	15344	N18 W01		265	900	2.5									
78	6	11	15344	N18 W12		263	1200	2.5	20072	N17 W19	267	(B)	3	R	50	8	DAO
78	6	12	15344	N19 W25		262	1400	2.5		N18 W24				H	20	3	CRO
78	6	13	15344	N19 W39		262	1200	2.5									
78	6	14	15344	N19 W51		262	1300	2.5									
78	6	15	15344	N19 W66		262	1300	3.0	20079	N16 W72	268	(B)	3	H	80	4	DRO
78	6	16	15344	N19 W81		262	500	1.0									

MCMATH REGION 15345 CMP DATE 11.0 RETURN OF REGION 15296 ROTATION 2

				CALCIUM		PLAGE	DATA			SUNSPOT	DATA					
YR	MO	DA	MC NO.	LAT CMD		L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	4	15345	S22 E85		258	800	1.5									
78	6	5	15345	S25 E75		255	1500	3.0									
78	6	6	15345	S25 E62		255	1200	3.0									
78	6	7	15345	S24 E41		257	1800	3.0									
78	6	9	15345	S24 E20		257	1800	2.5									
78	6	10	15345	S24 E06		258	1700	2.5									
78	6	11	15345	S24 W07		258	1800	2.5									
78	6	12	15345	S24 W19		256	1800	2.5									
78	6	13	15345	S24 W33		256	1500	2.0									

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MCMATH REGION 15345 CONTD CMP DATE 11.0 RETURN OF REGION 15296 ROTATION 2

					CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	14	15345	S24 W45	256	1200	2.0									
78	6	15	15345	S24 W60	256	1300	2.0									
78	6	16	15345	S24 W75	256	700	1.5									

MCMATH REGION 15352 CMP DATE 12.1

					CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	7	15352	N19 E54	244	200	2.0									
78	6	9	15352	N19 E32	245	100	1.0									
78	6	10	15352	N18 E21	243	300	2.5	20070	N16 E19	243	(B)	3	B	20	5	CRO
78	6	11	15352	N18 E08	243	500	2.5	20070	N16 E05	243	(B)	4	R	80	19	DAO
78	6	12	15352	N18 W07	244	700	3.0	20070	N17 W10	245	(BP)	4	H	70	14	DAO
78	6	13	15352	N18 W21	244	1500	3.0	20070	N17 W23	245	(BP)	3	B	80	11	DAI
78	6	14	15352	N17 W33	244	1500	3.5	20070	N17 W36	243	(BY)	4				
78	6	15	15352	N17 W48	244	1700	3.5	20070	N17 W50	246	(BP)	5	H	230	15	DAO
78	6	16	15352	N17 W63	244	2000	3.0	20070	N17 W65	245	(B)	4	B	370	10	DAI
78	6	17	15352	N17 W75	245	2000	3.0	20070	N18 W75	245	(AP)	3	B	270	4	DAC
78	6	18	15352	N17 W88	246	1000	2.0									

MCMATH REGION 15348 CMP DATE 12.3

					CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	6	15348	S12 E79	238	100	1.5									
78	6	7	15348	S12 E60	238	500	2.5	20067	S14 E62	240	(B)	3	B	10	2	BXO
78	6	8	15348					20067	S12 E48	240	(B)	3	B	10	5	BXO
78	6	9	15348	S12 E38	239	600	3.0	20067	S13 E35	240	(B)	2	B	80	2	BXO
78	6	10	15348	S13 E24	240	500	2.5									
78	6	11	15348	S13 E11	240	500	2.5									
78	6	12	15348	S13 W04	241	500	2.0									
78	6	13	15348	S13 W20	243	200	1.5									
78	6	14	15348	S13 W32	243	200	1.5									
78	6	15	15348	S13 W47	243	200	1.5									

MCMATH REGION 15353 CMP DATE 13.2

					CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	7	15353	S25 E70	228	200	2.0									

MCMATH REGION 15354 CMP DATE 14.3 RETURN OF REGION 15298 ROTATION 3

					CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	7	15354	N20 E80	218	700	1.5									
78	6	8	15354					20068	N18 E76	212	(AP)	3	B	10	1	AXX
78	6	9	15354	N22 E65	212	3500	3.0	20068	N17 E60	215	(AP)	4	B	10	4	HRX
78	6	10	15354	N22 E51	213	3600	2.5	20068	N18 E47	215	(BP)	3	B	50	12	CAI
78	6	11	15354	N22 E38	213	3400	2.5	20068	N18 E32	216	(AP)	3	R	70	24	CAO
78	6	12	15354	N21 E22	215	3500	2.5	20068	N18 E19	216	(AP)	2	H	30	5	CRO
78	6	13	15354	N21 E09	214	3200	2.5	20076	N18 W03	225	(AP)	3	B	10	2	AXX
78	6		15354					20077	N17 E16	206	(AF)	2	B	0	2	AXX
78	6	14	15354	N21 W02	213	3500	2.5									
78	6	15	15354	N22 W17	213	3500	3.0	20080	N19 W21	217	(AP)	2	H	0	1	AXX
78	6		15354					20081	N16 W12	208	(B)	3	H	40	9	CRO
78	6	16	15354	N22 W31	212	3300	2.5	20081	N15 W30	210	(AP)	3	B	10	3	BXO
78	6	17	15354	N21 W42	212	3700	3.0	20081	N16 W38	208	(B)	3	B	30	8	CRO
78	6	18	15354	N22 W54	212	4000	3.0	20081	N16 W52	208	(B)	4	B	150	8	DAI
78	6	19	15354	N20 W66	210	4000	3.0	20081	N17 W65	209	(B)	4	B	120	5	DAO
78	6	20	15354	N20 W78	210	3500	2.5	20081	N16 W82	212	(AF)	2				

MCMATH REGION 15356 CMP DATE 15.4 RETURN OF PART OF REGION 15301 ROTATION 4

					CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	9	15356	S30 E78	199	500	1.5									
78	6	10	15356	S30 E65	199	400	1.5									

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MCMATH REGION 15356 (CONT) CMP DATE 15.4 RETURN OF PART OF REGION 153Ø1 ROTATION 4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	11	15356	S30 E52	199	800	2.5	20073	S32 E53	195	(AF)	1	R	40	8	CRO
78	6	12	15356	S30 E38	199	1000	3.0	20073	S33 E38	197	(B)	3	H	20	5	BXO
78	6	13	15356	S30 E24	199	1000	2.5	20073	S33 E22	200	(BP)	3	B	20	3	CRO
78	6	14	15356	S30 E12	199	800	2.0									
78	6	15	15356	S30 W02	198	800	2.0									
78	6	16	15356	S29 W16	197	800	2.0									
78	6	17	15356	S30 W28	198	800	2.0									
78	6	18	15356	S30 W40	198	800	1.5									
78	6	19	15356	S30 W53	197	800	1.5									
78	6	20	15356	S30 W66	198	800	1.5									
78	6	21	15356	S30 W78	197	800	1.0									

MCMATH REGION 15357 CMP DATE 16.0 RETURN OF PART OF REGION 153ØØ ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	9	15357	N12 E82	195	900	2.5									
78	6	10	15357	N13 E74	190	1000	2.5									
78	6	11	15357	N14 E60	191	1000	2.0									
78	6	12	15357	N14 E47	190	1000	2.0									
78	6	13	15357	N14 E32	191	900	2.5									
78	6	14	15357	N14 E20	191	900	2.0									
78	6	15	15357	N14 E05	191	800	2.0									
78	6	16	15357	N14 W09	190	700	1.5		N11 E01				B	Ø	2	AXX
78	6	17	15357	N14 W20	190	600	1.5									
78	6	18	15357	N13 W33	191	600	1.5									
78	6	19	15357	N13 W46	190	600	1.5									
78	6	20	15357	N13 W58	190	500	1.5									
78	6	21	15357	N13 W72	191	500	1.0									

MCMATH REGION 15369 CMP DATE 16.1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	16	15369	N19 W09	190	100	2.0	20084	N19 W11	191	(AP)	2	B	Ø	1	AXX
78	6	17	15369	N19 W20	190	300	2.5	20084	N19 W20	190	(B)	3	B	20	4	CRO
78	6	18	15369	N19 W32	190	400	2.5	20084	N19 W34	190	(B)	3	B	20	3	CRO
78	6	19	15369	N19 W45	189	400	3.0	20084	N19 W47	191	(AP)	2	B	10	2	BXI
78	6	20	15369	N19 W59	191	300	2.0									
78	6	21	15369	N19 W73	192	300	1.0									

MCMATH REGION 15363 CMP DATE 16.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	12	15363	N26 E46	191	300	2.0									
78	6	13	15363	N26 E34	189	700	3.0	20078	N25 E34	188	(BP)	3	B	30	9	CRI
78	6	14	15363	N26 E23	188	800	3.0	20078	N25 E18	189	(B)	3				
78	6	15	15363	N26 E08	188	1000	3.0		N24 E14				H	10	4	BXO
78	6	16	15363	N26 W07	188	700	3.0	20083	N26 W11	191	(B)	3	B	10	8	BXO
78	6	17	15363	N26 W18	188	900	3.0	20083	N25 W18	188	(B)	3	B	60	8	CRO
78	6	18	15363	N25 W30	188	1100	3.0	20083	N26 W33	189	(B)	3	B	40	9	CRI
78	6	19	15363	N25 W44	188	1400	3.0	20083	N26 W45	189	(B)	3	B	10	2	CRO
78	6	20	15363	N25 W57	189	1500	3.0	20083	N26 W55	185	(AF)	2				
78	6	21	15363	N25 W70	189	1500	2.0									
78	6	22	15363	N25 W83	188	500	1.5									

MCMATH REGION 15364 CMP DATE 16.9

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	12	15364	S30 E56	181	200	1.5									
78	6	13	15364	S30 E45	178	200	1.5									
78	6	14	15364	S30 E32	179	200	1.0									

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MCMATH REGION 15359 — CMP DATE 17.3 — RETURN OF REGION 15324 — ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	10	15359	S21 E88	176	400	1.0									
78	6	11	15359	S21 E74	177	800	1.5									
78	6	12	15359	S21 E61	176	800	2.0									
78	6	13	15359	S20 E48	175	700	2.0									
78	6	14	15359	S20 E36	175	700	2.0									
78	6	15	15359	S20 E22	174	500	2.0									
78	6	16	15359	S20 E07	174	500	2.0									
78	6	17	15359	S20 W05	175	700	2.0									
78	6	18	15359	S21 W18	176	700	2.0									
78	6	19	15359	S21 W29	173	800	2.0									
78	6	20	15359	S20 W43	175	800	2.0									
78	6	21	15359	S20 W56	175	800	2.5	20096	S22 W50	168	(B)	3	B	10	2	BXO
78	6	22	15359	S20 W69	174	800	2.5	20096	S20 W67	170	AP	1				
78	6	23	15359	S20 W80	172	500	2.0									

MCMATH REGION 15358 — CMP DATE 17.4 — RETURN OF PART OF REGION 153ØØ ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	10	15358	N20 E88	176	600	1.5									
78	6	11	15358	N22 E78	173	700	2.0									
78	6	12	15358	N20 E62	175	1200	2.0									
78	6	13	15358	N21 E49	174	1200	2.0									
78	6	14	15358	N21 E38	173	1100	2.0									
78	6	15	15358	N20 E22	174	1100	2.0		N15 E25				H	20	6	BXO
78	6	16	15358	N20 E08	173	800	2.0									
78	6	17	15358	N21 W04	174	700	2.0	20085	N24 W03	173	X	1				
78	6	18	15358	N21 W15	173	1000	2.0									
78	6	19	15358	N21 W28	172	1200	2.0									
78	6	20	15358	N21 W41	173	1000	2.0									
78	6	21	15358	N21 W56	175	900	1.5									
78	6	22	15358	N21 W69	174	700	2.0									
78	6	23	15358	N23 W81	173	400	1.5									

MCMATH REGION 15372 — CMP DATE 18.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	18	15372	S31 E01	157	200	1.5									

MCMATH REGION 15360 — CMP DATE 18.7

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	11	15360	N16 E90	161	600	1.5		N13 E83				R	20	2	HAX
78	6	12	15360	N18 E78	159	1200	2.5	20074	N15 E70	165	(B)	3	H	30	4	CRO
78	6		15360					20075	N19 E85	200	(AP)	2	H	0	1	AXX
78	6	13	15360	N18 E65	158	3500	3.0	20074	N15 E60	162	(AF)	2	B	10	2	BXO
78	6		15360					20075	N19 E69	153	(AP)	3	B	90	2	HSX
78	6	14	15360	N18 E54	157	4000	3.0	20074	N16 E43	164	(B)	2				
78	6		15360					20075	N19 E53	174	(AP)	4				
78	6	15	15360	N18 E39	157	3800	2.5	20075	N19 E41	155	(AP)	4	H	70	8	DAO
78	6	16	15360	N19 E25	156	3200	2.5	20075	N19 E25	155	(AP)	4	B	50	2	HAX
78	6	17	15360	N19 E14	156	3200	2.5	20075	N19 E15	155	(D)	3	B	60	5	HAX
78	6		15360					20086	N17 E07	163	(B)	2	B	10	3	AXX
78	6	18	15360	N18 E02	156	3200	2.5	20075	N20 E03	153	(Y)	3	B	80	11	DRI
78	6		15360					20086	N18 W06	162	(B)	5	B	80	9	DAI
78	6	19	15360	N18 W12	156	3500	3.0	20075	N20 W09	153	(BP)	2	B	10	5	BXC
78	6		15360					20086	N18 W19	163	(BP)	4	B	70	14	DSI
78	6	20	15360	N18 W25	157	3500	3.0	20075	N19 W22	152	(B)	3	B	140	11	DAI
78	6		15360					20086	N18 W35	165	(BP)	5				
78	6	21	15360	N18 W39	158	3500	3.0	20075	N19 W33	151	(B)	3	B	0	1	AXX
78	6		15360					20086	N18 W48	166	(B)	5	B	160	11	DSO
78	6	22	15360	N18 W51	156	3100	3.0	20086	N18 W62	165	(BF)	5				
78	6	23	15360	N18 W64	156	3000	3.5	20086	N18 W75	165	BP	3				
78	6	24	15360	N18 W76	155	2000	3.0		N17 W84				B	70	2	HSX
78	6	25	15360	N20 W88	154	600	1.0									

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MCMATH REGION 15361 CMP DATE 19.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	12	15361	N10 E90	147	300	1.0									
78	6	13	15361	N12 E75	148	600	3.0									
78	6	14	15361	N12 E63	148	600	2.5									
78	6	15	15361	N12 E49	147	600	2.0									
78	6	16	15361	N12 E34	147	400	2.0									
78	6	17	15361	N12 E21	149	500	2.0		N11 E25				B	0	2	AXX
78	6	18	15361	N12 E07	151	400	2.0									
78	6	19	15361	N12 W07	151	400	2.0									
78	6	20	15361	N12 W20	152	400	2.0									
78	6	21	15361	N12 W33	152	300	1.0									

MCMATH REGION 15370 CMP DATE 20.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	17	15370	N11 E33	137	600	2.5	20087	N11 E35	135	(B)	3	B	60	2	BXO
78	6	18	15370	N11 E20	138	800	2.0		N10 E21				B	10	2	HSX
78	6	19	15370	N11 E08	136	500	2.0	20090	N12 E06	138	(AP)	3	B	10	1	AXX
78	6	20	15370	N11 W05	137	600	3.0	20090	N12 W08	138	(B)	4	B	80	7	DAO
78	6	21	15370	N11 W18	137	700	3.0	20090	N12 W21	139	(B)	4	B	110	11	DAO
78	6	22	15370	N12 W31	136	900	3.0	20090	N12 W35	138	(B)	4	B	240	13	DAO
78	6	23	15370	N12 W43	135	1200	3.0	20090	N13 W48	138	(B)	5	B	180	4	DSO
78	6	24	15370	N12 W56	135	1300	3.0	20090	N12 W64	140	(B)	4	B	120	2	DSO
78	6	25	15370	N12 W70	136	1100	2.0									
78	6	26	15370	N11 W86	138	600	1.5									

MCMATH REGION 15379 CMP DATE 20.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	24	15379	S12 W54	25	200	1.5									
78	6	25	15379	S12 W69	135	300	1.5									
78	6	26	15379	S11 W84	136	300	1.5									

MCMATH REGION 15365 CMP DATE 21.9 RETURN OF REGIONS 15305 & 15331 ROTATION 2 & 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	15	15365	S25 E79	117	2000	2.5	20082	S24 E78	118	(AP)	2	M	240	4	DAO
78	6	16	15365	S26 E67	114	2800	2.5	20082	S24 E62	118	(BP)	4	B	90	4	HAX
78	6	17	15365	S26 E56	114	2500	3.0	20082	S24 E52	118	(D)	4	B	250	8	DAC
78	6	18	15365	S28 E44	114	2800	3.0	20082	S23 E38	118	(D)	4	B	240	20	DAC
78	6	19	15365	S28 E30	114	3200	3.0	20082	S23 E26	118	(BP)	3	B	60	14	DRI
78	6	20	15365	S28 E17	115	3600	3.0	20082	S25 E13	117	(BP)	3	B	40	18	CRI
78	6	21	15365	S27 E05	114	3200	2.5	20082	S25 E03	115	(BP)	3	B	30	11	BXI
78	6	22	15365	S28 W08	113	3600	2.5	20082	S25 W14	117	(B)	4	B	40	22	DAI
78	6	23	15365	S28 W20	112	3200	3.5	20082	S27 W24	114	(B)	3	B	40	7	DAO
78	6	24	15365	S28 W33	112	3200	3.0	20082	S28 W39	115	(B)	3	B	20	5	DRO
78	6	25	15365	S27 W46	112	2800	3.0									
78	6	26	15365	S28 W60	112	2500	3.5									
78	6	27	15365	S28 W72	111	2000	2.5									
78	6	28	15365	S28 W85	111	1100	1.5									

MCMATH REGION 15366 CMP DATE 23.6 RETURN OF REGION 15321 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	16	15366	S15 E85	96	800	1.5									
78	6	17	15366	S15 E75	95	2000	3.0									
78	6	18	15366	S15 E68	90	2800	2.5									
78	6	19	15366	S15 E54	90	3700	3.0	20093	S18 E59	85	AP	2				
78	6	20	15366	S15 E40	92	3700	3.0	20093	S18 E43	87	(B)	3	B	30	3	CRO
78	6		15366					20094	S18 E36	94	(AP)	2				
78	6	21	15366	S15 E27	92	3300	2.5	20093	S17 E35	83	(B.	4	B	20	4	CRO
78	6		15366					20097	S14 E20	98	(BP)	3	B	20	6	BXO
78	6	22	15366	S15 E14	91	3300	2.5	20093	S16 E20	83	(AF)	4	B	30	2	HSX
78	6		15366					20097	S13 E07	96	(AP)	4	B	20	12	CSO
78	6	23	15366	S15 E02	90	3200	2.5	20097	S14 W06	96	(AP)	4	B	10	8	BXO
78	6	24	15366	S15 W11	90	3200	2.5									
78	6	25	15366	S15 W23	89	3000	3.0									

CONTD

REGIONS OF SOLAR ACTIVITY

JUNE 1978

MCMATH REGION 15366 CONTD CMP DATE 23.6 RETURN OF REGION 15321 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	26	15366	S15 W39	91	2800	3.0									
78	6	27	15366	S15 W51	90	2800	3.0									
78	6	28	15366	S15 W66	92	2300	2.5									
78	6	29	15366	S15 W78	91	1800	1.5									

MCMATH REGION 15367 CMP DATE 23.9

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	16	15367	N40 E87	94	100	1.5									
78	6	17	15367	N40 E79	91	400	2.0									
78	6	18	15367	N40 E68	90	700	2.0									
78	6	19	15367	N40 E55	89	700	2.5									
78	6	20	15367	N40 E43	89	600	2.0									
78	6	21	15367	N40 E30	89	400	2.0									
78	6	22	15367	N39 E18	87	200	2.0									
78	6	23	15367	N39 E06	86	100	2.0									
78	6	24	15367	N39 W07	86	200	2.0									
78	6	25	15367	N39 W19	85	200	2.0									
78	6	26	15367	N39 W32	84	200	1.0									
78	6	27	15367	N39 W45	84	200	1.5									
78	6	28	15367	N39 W58	84	100	1.5									

MCMATH REGION 15371 CMP DATE 24.1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	17	15371	N31 E85	85	600	2.5		N31 E81				B	60	1	HSX
78	6	18	15371	N33 E75	83	800	2.5	20089	N32 E68	88	(AP)	2	B	20	2	BXO
78	6	19	15371	N33 E61	83	1400	3.5	20089	N32 E54	90	(AP)	3	B	10	2	BXI
78	6	20	15371	N33 E48	84	1500	2.5	20089	N32 E42	88	(AP)	3				
78	6	21	15371	N33 E34	85	1000	3.0									
78	6	22	15371	N33 E21	84	1000	3.0		N31 E19				B	10	4	BXO
78	6	23	15371	N33 E08	84	1000	3.0		N31 E08				B	0	1	AXX
78	6	24	15371	N33 W04	83	1000	2.5									
78	6	25	15371	N33 W16	82	800	2.5									
78	6	26	15371	N33 W29	81	1000	2.0									
78	6	27	15371	N33 W40	79	800	2.0									
78	6	28	15371	N33 W54	80	700	1.5									

MCMATH REGION 15368 CMP DATE 24.5 RETURN OF REGION 15314 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	16	15368	N16 E87	94	100	1.0									
78	6	17	15368	N16 E80	90	1000	2.5	20088	N19 E85	85	AP	3	B	70	1	HSX
78	6	18	15368	N17 E70	88	2100	3.0	20088	N19 E70	86	(AP)	4	B	130	2	HSX
78	6	19	15368	N19 E65	79	6500	3.5	20088	N19 E58	86	(AP)	5	B	50	1	HAX
78	6		15368					20091	N17 E78	66	(AP)	5	B	160	2	CSI
78	6	20	15368	N19 E52	80	9000	3.5	20088	N19 E45	85	(AP)	5	B	90	2	HSX
78	6		15368					20091	N17 E65	65	(D)	5	B	630	7	EKO
78	6	21	15368	N19 E40	79	9000	3.0	20088	N19 E32	86	(AP)	5	B	70	4	HSX
78	6		15368					20091	N18 E54	64	(D)	6	B	480	19	EKI
78	6		15368					20098	N19 E21	97	(AP)	3	B	0	1	AXX
78	6	22	15368	N19 E26	79	9000	3.0	20088	N19 E19	84	(AP)	5	B	80	5	HAX
78	6		15368					20091	N18 E40	63	(B)	6	B	530	26	EKI
78	6		15368					20100	N14 E08	95	(B)	3	B	20	5	CRO
78	6	23	15368	N19 E13	79	8900	3.0	20088	N18 E06	84	(AP)	4	B	40	10	HSX
78	6		15368					20091	N17 E25	65	(B)	6	B	560	19	CKI
78	6		15368					20100	N13 W05	95	(B)	4	B	30	7	CRO
78	6	24	15368	N19 E00	79	8900	3.0	20088	N18 W08	84	(AP)	3	B	20	6	CRI
78	6		15368					20091	N16 E08	68	(AP)	5	B	760	15	CKI
78	6		15368					20100	N13 W20	96	(B)	3	B	30	6	DRO
78	6	25	15368	N19 W12	78	8400	3.0	20091	N17 W04	68	(BP)	6				
78	6		15368					20100	N11 W33	97	(B)	3				
78	6	26	15368	N19 W27	79	8400	3.0	20091	N17 W16	67	(Y)	5				
78	6	27	15368	N19 W39	78	8000	3.5									
78	6	28	15368	N19 W52	78	7500	3.5	20091	N18 W43	67	(BY)	3	B	140	29	DAC
78	6	29	15368	N19 W65	78	6500	3.5	20091	N18 W54	65	(BP)	4	B	100	19	ESI
78	6	30	15368	N19 W78	77	5000	3.5	20091	N18 W70	68	(BF)	4	R	120	16	DAO
78	7	01	15368						N18 W87				B	150	3	C

REGIONS OF SOLAR ACTIVITY

JUNE 1978

MCMATH REGION 15374 CMP DATE 25.2 RETURN OF REGION 15335 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	19	15374	S18 E75	69	500	2.5									
78	6	20	15374	S18 E61	71	500	2.0									
78	6	21	15374	S17 E48	71	500	2.0									
78	6	22	15374	S17 E35	70	400	2.0									
78	6	23	15374	S17 E22	70	500	2.0									
78	6	24	15374	S17 E09	70	500	2.5		S17 E04				B	10	4	BXO
78	6	25	15374	S17 W04	70	600	2.5	20101	S17 W07	71	(B)	3				
78	6	26	15374	S17 W19	71	600	2.5	20101	S18 W18	69	(AP)	3				
78	6	27	15374	S17 W32	71	600	2.0									
78	6	28	15374	S17 W45	71	500	2.0									
78	6	29	15374	S17 W58	71	400	2.0									
78	6	30	15374	S17 W72	71	400	1.5	20108	S15 W61	59	(AP)	2				

* MCMATH REGION 15373 CMP DATE 26.1

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	19	15373					20092	N26 E88	56	(AP)	3				
78	6	20	15373					20092	N24 E69	61	(AP)	2	B	90	5	CRO
78	6	21	15373					20092	N25 E58	60	(Y)	3				
78	6	22	15373					20092	N25 E45	58	(AP)	4				
78	6	23	15373					20092	N25 E30	60	(AP)	4	B	50	11	CSO
78	6	24	15373					20092	N27 E17	59	(BF)	4	B	70	10	DSO
78	6	25	15373					20092	N26 E08	56	(AP)	4				
78	6	26	15373	N27 W06	58	900	2.0	20092	N26 W06	57	(AP)	4				
78	6	27	15373	N26 W18	57	1000	2.5									
78	6	28	15373	N26 W30	56	1000	3.0	20092	N26 W33	57	(B)	3	B	20	9	BXO
78	6	29	15373	N27 W43	56	1000	3.0	20092	N26 W47	58	(B)	3	B	30	4	BXO
78	6	30	15373	N27 W56	55	1200	3.0	20092	N27 W59	57	(B)	3				
78	7	01	15373						N25 W76				B	20	3	B

MCMATH REGION 15375 CMP DATE 26.7

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	20	15375	S20 E79	53	3800	3.5	20095	S18 E80	50	(AP)	3	B	270	6	DHO
78	6	21	15375	S19 E69	50	3700	3.5	20095	S19 E68	50	(AP)	5	B	650	8	EKO
78	6	22	15375	S20 E58	47	4300	3.5	20095	S19 E55	48	(B)	6	B	600	23	EKI
78	6	23	15375	S20 E45	47	4700	3.5	20095	S20 E42	48	(B)	5	B	650	34	EKC
78	6	24	15375	S20 E32	47	4600	3.5	20095	S21 E28	48	(BP)	6	B	700	39	EAC
78	6	25	15375	S20 E18	48	4400	3.5	20095	S20 E15	49	(B)	6				
78	6	26	15375	S20 E02	50	4500	3.5	20095	S20 E03	48	(BY)	6				
78	6	27	15375	S20 W18	49	4500	3.5									
78	6	28	15375	S20 W23	49	5000	3.0	20095	S19 W25	49	(BY)	4	B	360	47	FSI
78	6	29	15375	S20 W37	50	5200	3.5	20095	S19 W40	51	(Y)	4	B	390	38	FKI
78	6	30	15375	S19 W50	49	5800	3.5	20095	S20 W50	48	(D)	4				
78	7	01	15375					20095	S20 W70		(AP)	2	B	200	15	E
78	7	02	15375					20095	S20 W80		(AP)	3	B	140	2	H

MCMATH REGION 15376 CMP DATE 27.6 RETURN OF REGION 15319 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	6	20	15376	N20 E89	43	600	1.5									
78	6	21	15376	N22 E78	41	3800	3.0	20099	N20 E79	39	(AP)	4	B	130	1	HSX
78	6	22	15376	N23 E66	39	4400	3.5	20099	N22 E69	34	(B)	5	B	300	5	EKO
78	6	23	15376	N23 E53	39	4000	3.5	20099	N22 E55	35	(B)	5	B	390	14	EAO
78	6	24	15376	N23 E40	39	4000	3.5	20099	N22 E42	34	(B)	5	B	260	19	EAI
78	6	25	15376	N23 E27	39	4000	3.5	20099	N22 E29	35	(D)	5				
78	6	26	15376	N23 E14	38	4000	3.5	20099	N22 E15	36	(BP)	5				
78	6	27	15376	N23 E02	37	3800	3.0									
78	6	28	15376	N23 W10	36	4000	3.5	20099	N20 W15	39	(AP)	3				
78	6		15376					20103	N25 W10	34	(D)	3	B	120	28	EAI
78	6	29	15376	N23 W23	36	4500	3.5	20103	N24 W24	35	(BY)	4	B	180	38	EAI
78	6	30	15376	N23 W35	34	5000	3.5	20103	N24 W38	36	(BY)	4				
78	7	01	15376					20103	N23 W55		(B)	3	B	140	29	E
78	7	02	15376					20103	N23 W65		(B)	3	B	110	15	E
78	7	03	15376					20103	N23 W78		(AP)	3	B	70	4	C

*NOTE: McMath Region 15373 did not appear on the solar disk until 26 June. Previous to this date Mt. Wilson Spot Group 20092 appears to be in McMath Region 15368.

REGIONS OF SOLAR ACTIVITY

JUNE 1978

MCMATH REGION 15378 CMP DATE 28.8

				CALCIUM		PLAGE DATA			SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H STA	AREA	CNT	CLASS
78	6	24	15378	S22	E57	22	200	2.0									
78	6	25	15378	S22	E45	21	200	1.5									
78	6	26	15378	S22	E29	23	300	1.0									
78	6	27	15378	S22	E17	22	200	1.0									

MCMATH REGION 15377 CMP DATE 30.4 RETURN OF REGIONS 15330 AND 15337 ROTATION 2 & 3

				CALCIUM		PLAGE DATA			SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H STA	AREA	CNT	CLASS
78	6	23	15377	S25	E88	4	200	1.0									
78	6	24	15377	S27	E74	5	600	1.5									
78	6	25	15377	S27	E62	4	1000	2.0									
78	6	26	15377	S28	E50	2	1200	2.0									
78	6	27	15377	S26	E38	1	1200	2.5									
78	6	28	15377	S27	E25	1	1200	2.0									
78	6	29	15377	S28	E12	1	1200	2.5									
78	6	30	15377	S28	W01	0	1200	2.0									
78	7	05	15377	S28	W69		800	1.0									

Note: No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on June 8, 1978.
No sunspot observations were made at Mt. Wilson June 27, 1978.

DAILY CALCIUM PLAGE INDEX

JUNE 1978

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
78	6	1	41.4	78	6	11	20.3	78	6	21	55.3
78	6	2	29.7	78	6	12	24.8	78	6	22	63.0
78	6	3	21.8	78	6	13	28.8	78	6	23	70.2
78	6	4	22.0	78	6	14	30.9	78	6	24	69.7
78	6	5	19.9	78	6	15	32.5	78	6	25	66.6
78	6	6	14.2	78	6	16	25.9	78	6	26	65.3
78	6	7	14.9	78	6	17	31.4	78	6	27	61.8
78	6	8	*	78	6	18	34.8	78	6	28	56.1
78	6	9	16.5	78	6	19	48.6	78	6	29	51.2
78	6	10	17.1	78	6	20	58.7	78	6	30	46.1

* NO OBSERVATIONS

Errata: In SGD 406 Part I, page 118, Mt. Wilson sunspot group 20014 erroneously appeared in McMath Region 15235 for 20 April 1978. This Mt. Wilson 20014 entry should appear in McMath Region 15254.

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
01	0007	0130	0023	1-	1				1				0006	15319
01	1325	1421	1334	1-	3	1			1		1		1326	15319
01	2104	2218	2112	1-	5	3		1	1	1	10		2100	X-RAY
02	0258	0414	0309	1-	1				1				0258	15314
02	0614	0630	0619	1	3			1	2				0612	X-RAY
02	0754	0803	0758	1-	3			2	1		1		0750	15321
02	1107	1151	1114	1-	3				2		1		1103	15321
02	1809E	1849	1832	1-	1			1					1803	15319
02	2303	2336	2312	1-	1				1				2307E	15314
03	0206	0325	0238	1-	1				1				*	
03	0228	0322	0244	1-	1				1				0230	X-RAY
03	0531	0630	0540	1-	1				1				0535	15314
03	0823	0942	0829	1-	5	1		1	3		1		0825	15321
05	0226	0325	0233	1-	3	1			1				0220	X-RAY
05	0416	0524D	0426	1-	1				1				0411	X-RAY
05	0726	0924	0742	2-	3	2	1	3	4		2		0729E	15319
05	1306	1417	1318	1-	5			1	3	1	11		1250	15319
08	0021	0058	0024	1-	1				1				0020	15337
10	1219E	1350	1258	1-	3			2					1221	15333
10	2344	0010	2353	1-	1				1				2346	X-RAY
12	0408	0508	0421	1-	1				1				0408	X-RAY
12	1637	1704	1644	1-	5	2					8		1637	15352
13	0141	0216	0150	1-	3		1		1				0136E	15352
13	0438	0515	0451	1-	1				1				0444	15352
13	2121	2130	2124	1-	1	1							2121	15352
14	0130	0212	0135	1-	1				1				0125	X-RAY
14	0902	0958	0913	1-	1				1				0910	15358
15	0330	0412	0342	1-	1				1				0333	X-RAY
16	2319E	0117	2352	1	1				1				2318	15366
16	2330	0046	2356	1-	1				1				2323	15352
17	0154	0222D	0204	1-	1				1				0159	15352
17	0218E	0317D	0227	1-	1				1				0215	15360
17	1818	1915	1820	1	5	1					7		1826E	15354
17	1836	1906	1843	1-	3						5		1835	15354
18	0009	0118D	0038	1-	1				1				0010	15360
18	0118E	0222	0124	1-	3	1			1				0112	15352
18	0735	0828	0742	1-	1				1				0718	15363
19	0525E	0610	0536	1-	1				1				0529	15356
19	0646	0733D	0659	1	3				2				0649	X-RAY
19	1225	1255	1231	1	5			1	4		2		1222	X-RAY
19	1517	1557	1524	1-	3				2		1		1515	X-RAY
19	2130	2207	2141	1-	1				1				2129	X-RAY
19	2337	0020D	2344	1-	1				1				2336	15354
20	0813	0848	0827	1	3			1	2				0807	15368
20	0924	0945	0930	1	3			1	2				0922	15375
20	1153	1240	1201	1	3			1	2		1		1143	15375
20	1726	1818	1735	1-	5				1		7		1721	15368
20	1921	2024	1933	1	5	3	1	1	3	1	11		1918	15375
20	2209	2258	2215	1-	1				1				2209	15375
20	2329	0012	2341	1-	1				1				2332	15368
21	0506	0646	0521	1-	1				1				0514E	15375
21	1533	1659	1548	1+	5	1	1	1	3		13		1534E	15375
21	2347	0022	2354	1-	1				1				2347	X-RAY
22	0235	0420	0250	2	5	1		1	1		1		0236E	15375
22	0601	0758	0611	1	5	3		2	3		1		0601	15370
22	1026	1125	1035	1	5	1			4		1		1027	15375
22	1653	1859	1724	2+	5	3	1	1	5	1	12		1645	15368
22	1949	2122	2024	1	5	3		1	2	1	13		1940	15373

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
23	0742	0930	0751	1	5	2		2	2		2		0744E	15373
24	1320	1500	1337	1-	3			1	2		1		1320	15375
24	1522	1532	1525	1	1		1						1524	X-RAY
24	1817	1857	1830	1	3	1		1			9		NF	
24	1950	2030	1955	1	1	1							*	
25	0033E	0102	0039	1-	1				1				0032	X-RAY
25	0604	0710	0622	1-	1				1				0609	X-RAY
25	0819	1025	0844	1	5	2		1	3		1		0822	X-RAY
25	1613	1636	1623	1-	1			1					*	
25	1709	1734	1717	1-	1			1					*	
25	1740	1806	1747	1-	1			1					*	
25	1818	1854	1827	1-	1			2					*	
~~26~~	1210	1230D	1230	1-	1				1		1		1207	X-RAY
26	1438	1455	1443	1-	5	1		2	2		10		1453E	15375
26	1535	1910	1557	3	5	3	2	5	4	1	14		1533	X-RAY
26	2203	2238D	2210	1-	3				1		1		2202	X-RAY
26	2238	2313	2251	1-	1				1				2236	X-RAY
27	0100	0223	0109	1-	3	1			1				0057	X-RAY
27	1146	1251	1158	1-	1				1		1		1147	15376
28	0245	0407	0252	2	3	1			1		1		0248E	15375
29	0322	0415	0334	1-	1				1				0335E	15375
29	0431	0627	0440	1	1				1				0434E	15376
29	1121	1150	1127	1	5	2		3	3		3		1117	X-RAY
29	1416	1539	1423	1	5	1		4	2		10		1414	15376
29	1538	1634	1544	1	1			1					1542	15375
29	2212	0040	2240	1	5	1			2		4		2206	15376
29	2300E	0002	2319	1-	1				1				2303	15368
30	0148	0356	0215	1-	1				1				0149	15368
30	1411	1431	1413	1-	1			1					1411	15381
30	1447	1627	1502	1-	5	2	2	3	2	1	12		1445	15376
30	1627	1700	1636	1-	5				1		9		1631E	15376
30	1704	1758	1722	1	5	2	1	1	2	1	10		1706E	15376
30	1802	1842	1810	1-	5			1	1	1	9		1759	X-RAY

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-25	0000-2400 A3
01-18	0000-2400 A5
03-04	0000-2400 A46
05-14	0000-2400 A28
06	0000-2400 TN, 1005-1326 UM (16kHz)
08	0000-2400 A40
09	1505-1523 UM (16 kHz)
10	1507-1525 UM (16 kHz)
13	1014-1329 UM (16 kHz)
15	0000-2400 A40
20	1004-1340 UM (16 kHz), 1822-1900 TM
21-30	0000-2400 A28
21	0750-0817 UM (16 kHz)
27-30	0000-2400 A3
27	1006-1324 UM (16 kHz)
29-30	0000-2400 A40
29	0000-2400 A26

STATIONS REPORTING FOR JUNE 1978

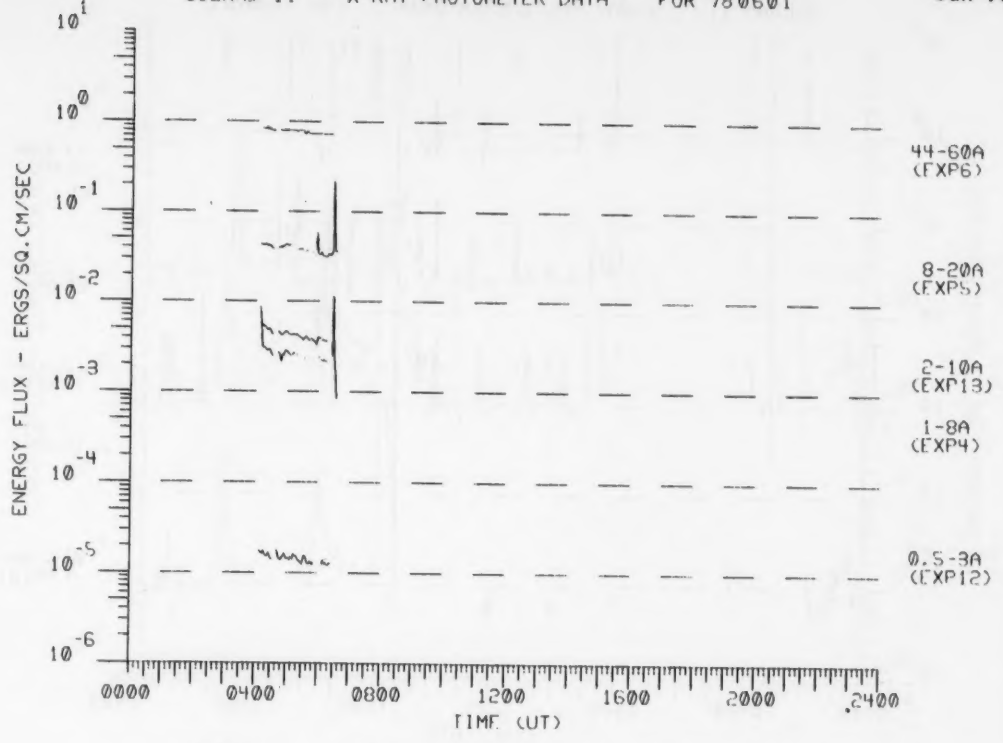
AAVSO (A1, A3, A5, A19, A21, A26, A28, A31, A34, A37, A40, A45, A46) (SES) (A1, A31) (SEA) (A31) (SWF)
CHILWORTH (CL) (SCNA)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA, SES)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
JULIUSRUH (JH) (SWF)
KUHLUNGSBORN (KU) (SEA, SPA)
MC MATH (MC) (SWF, SCNA)
NEW JERSEY (NJ) (SES)
PANSKA VES (PU) (SWF, SEA, SES)
PRESTON (LO) (SEA)
RIO DE JANEIRO (RJ) (SPA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SES)
ST CLOUD (SC) (SES)
TABLE MOUNTAIN (TM) (SPA, LF-SPA)
TORINO (TN) (SPA)
UPICE (UI) (SEA)
VSETIN (VS) (SEA)

NOTE: RIO DE JANEIRO, BRAZIL IS A NEW STATION REPORTING FOR THE FIRST TIME

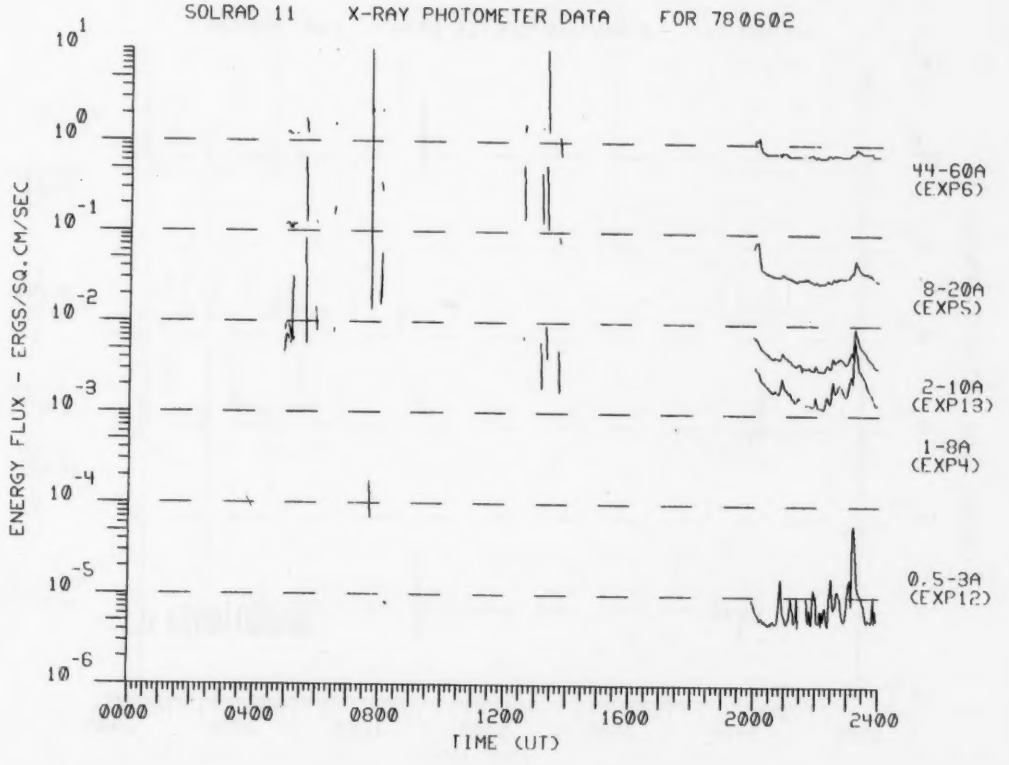
SIDs BY McMATH REGION
JUNE 1978

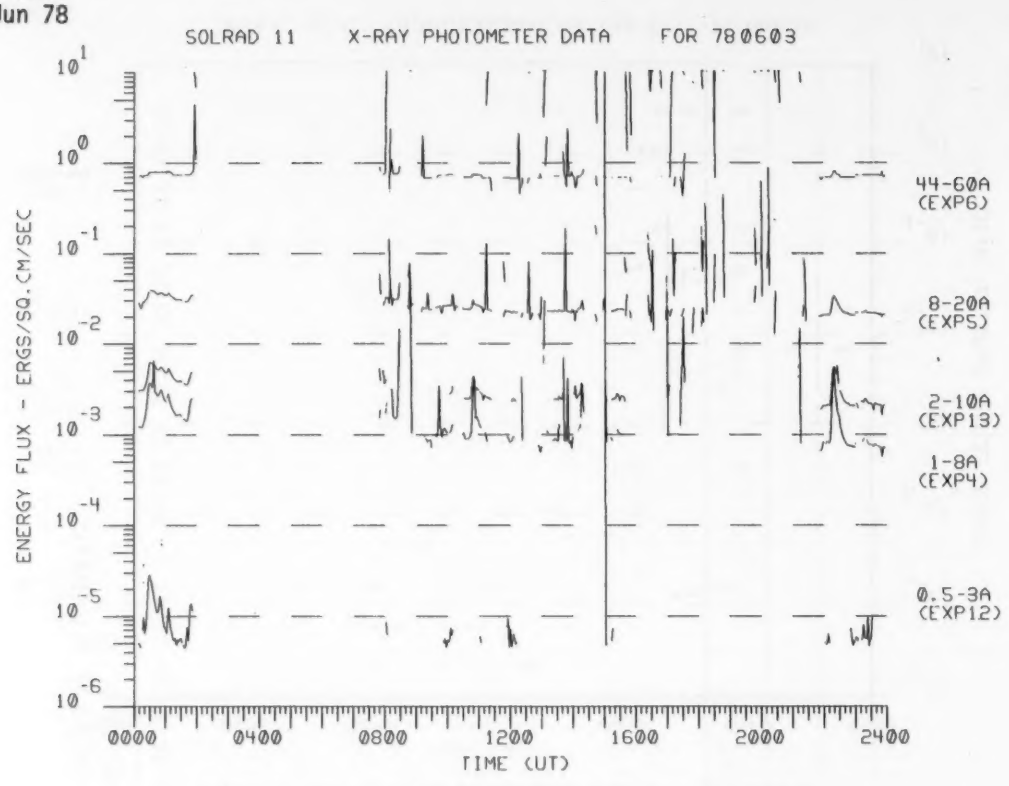
DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
REGION																														
15314		2	1																											
15319	2	1			2																									
15321		2	1																											
15333										1																				
15337								1																						
15352												1	3			1	1	1												
15354																	2		1											
15356																			1											
15358														1																
15360																	1	1												
15363																		1												
15366																1														
15368																				3		1							1	1
15370																						1								
15373																						1	1							
15375																				4	2	2		1		1		1	2	
15376																											1		3	1
15381																														1
X-RAY	1	1	1		2					1		1		1	1				4		1			1	3	4	1		1	1
UNKNOWN																								1						
NO FP			1																					1	4					

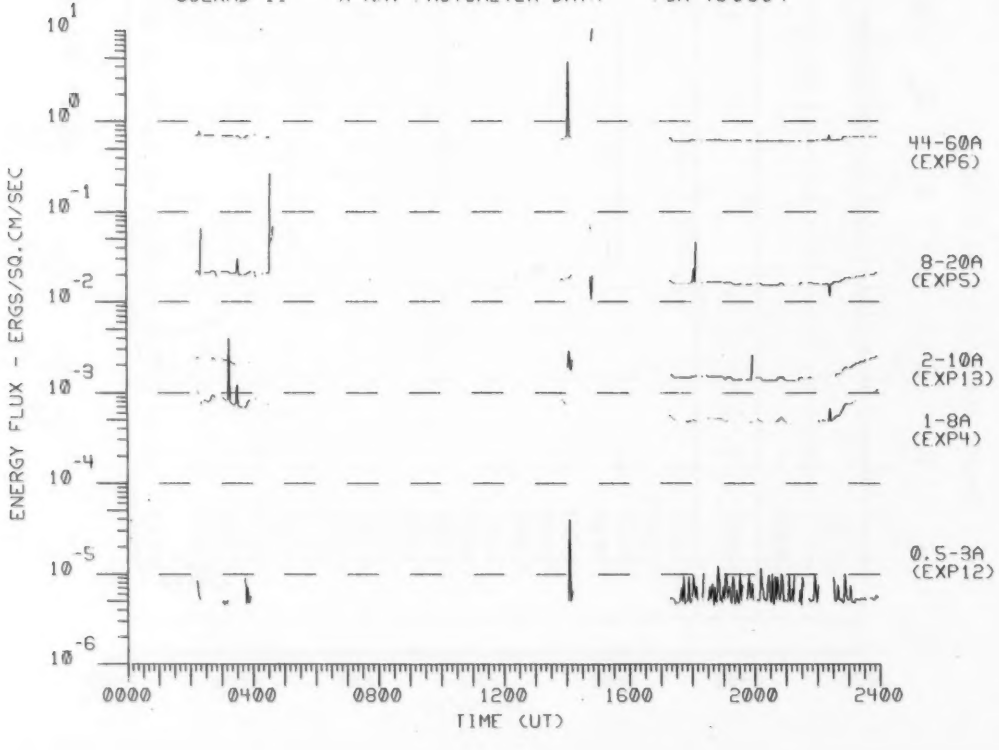
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780601

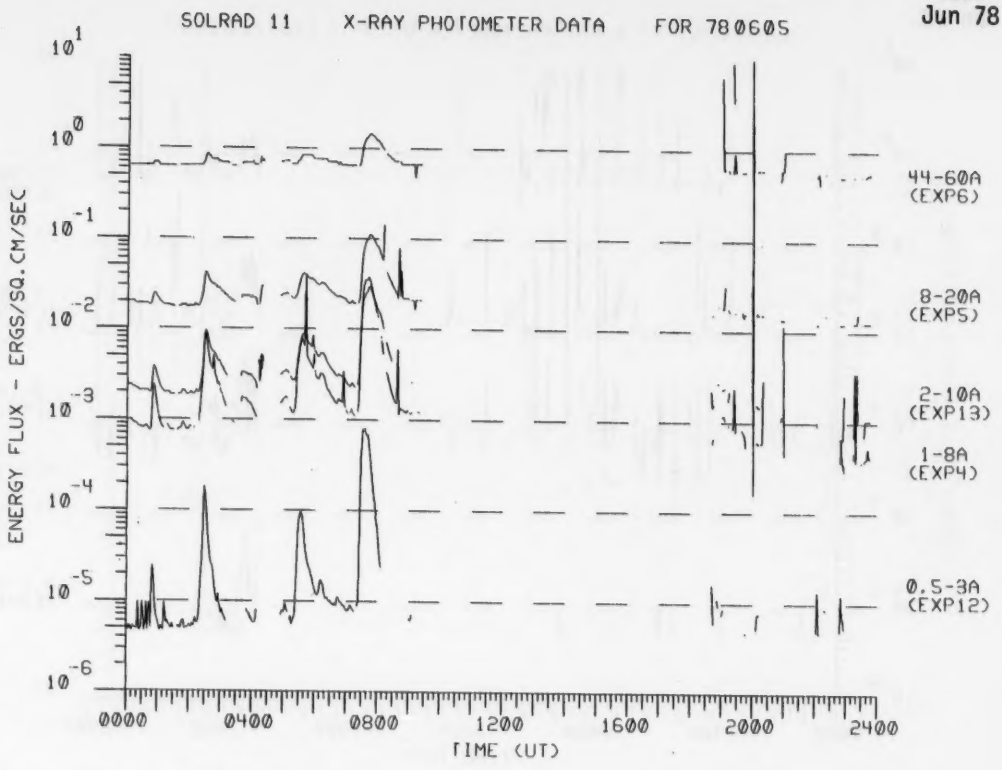


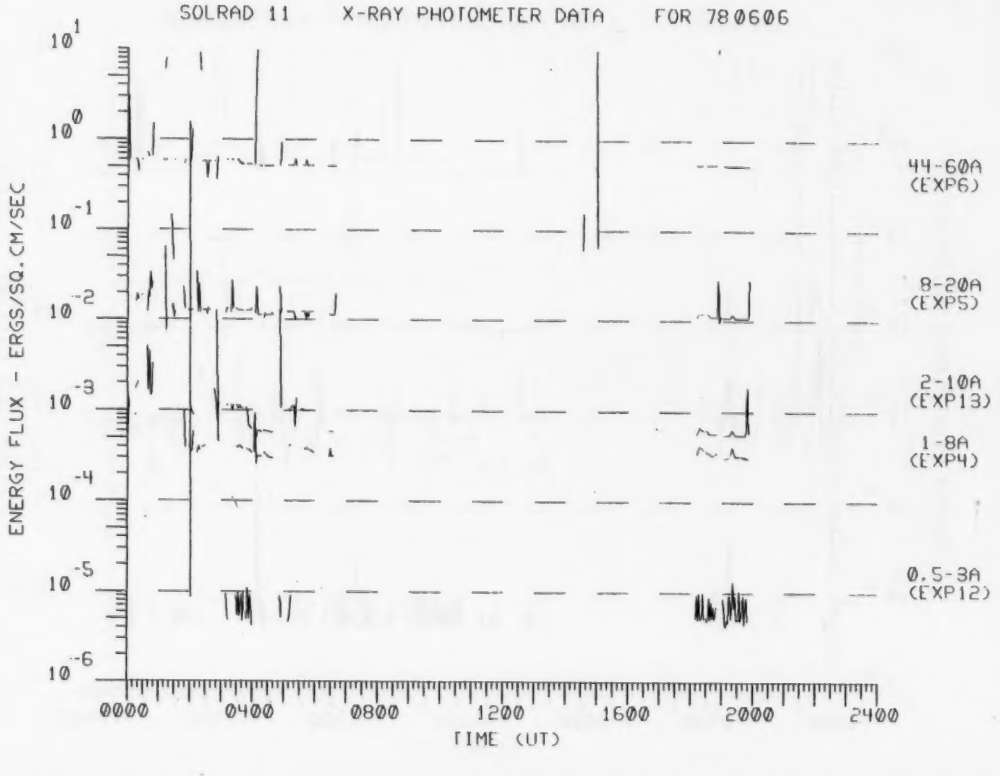
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780602



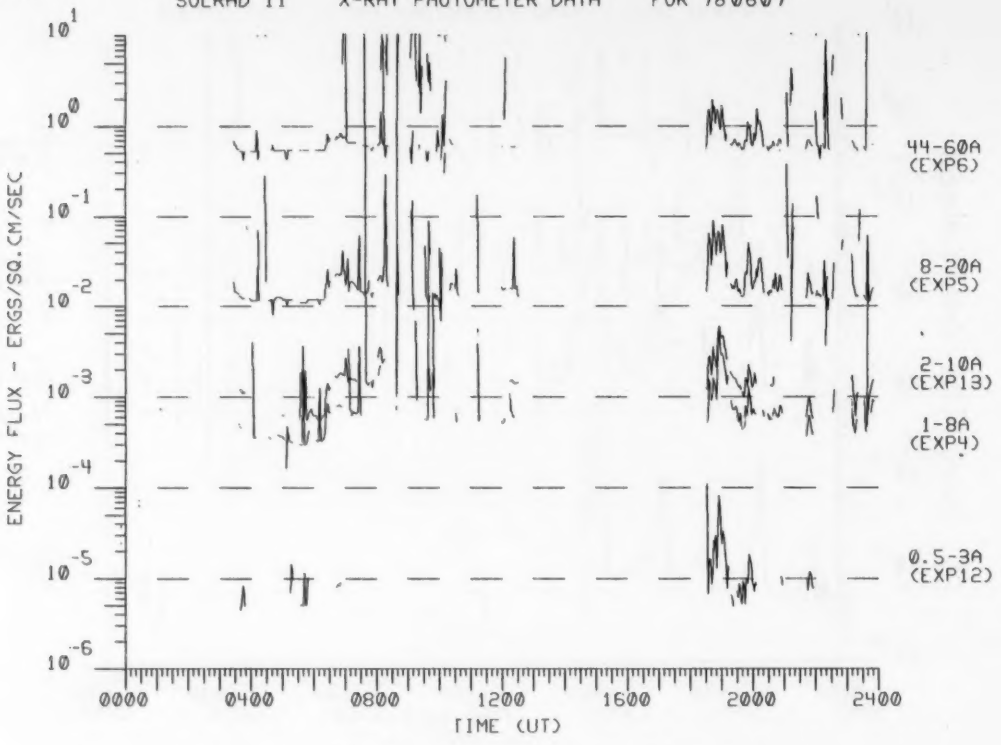

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780603
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780604
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

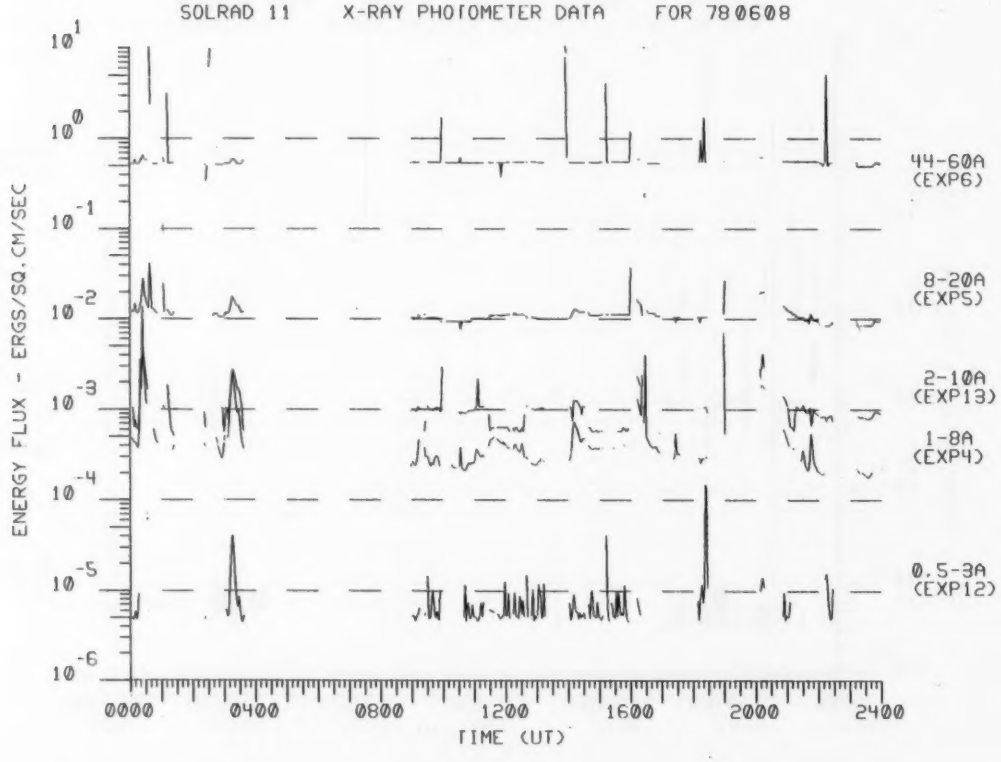

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780605
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

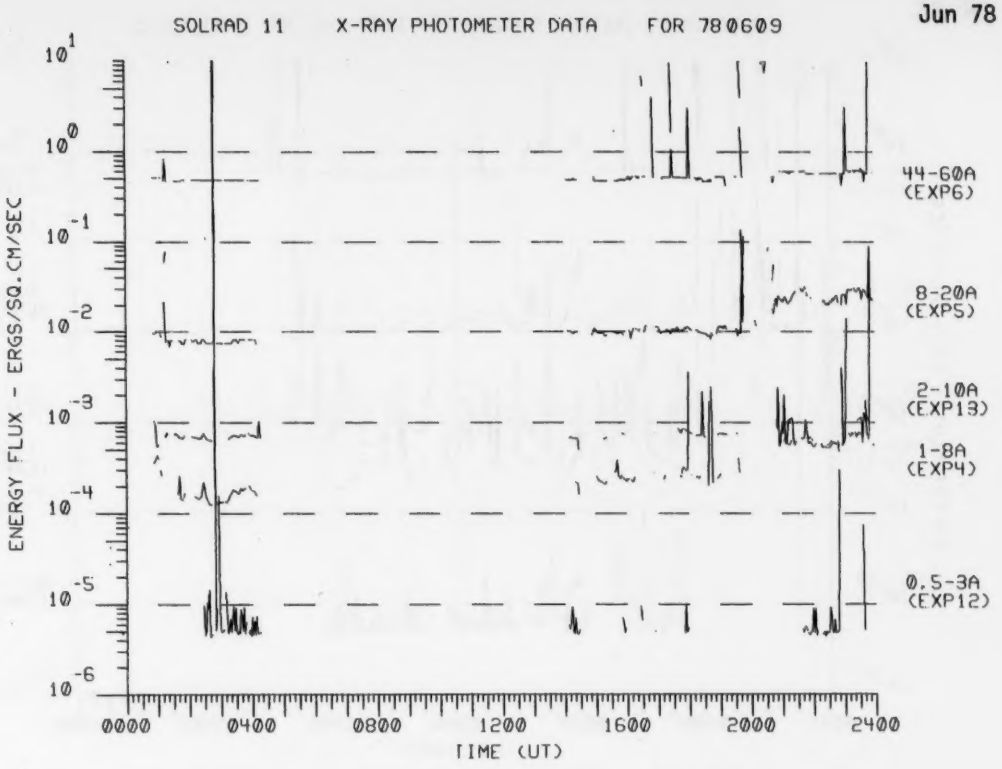

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780606
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

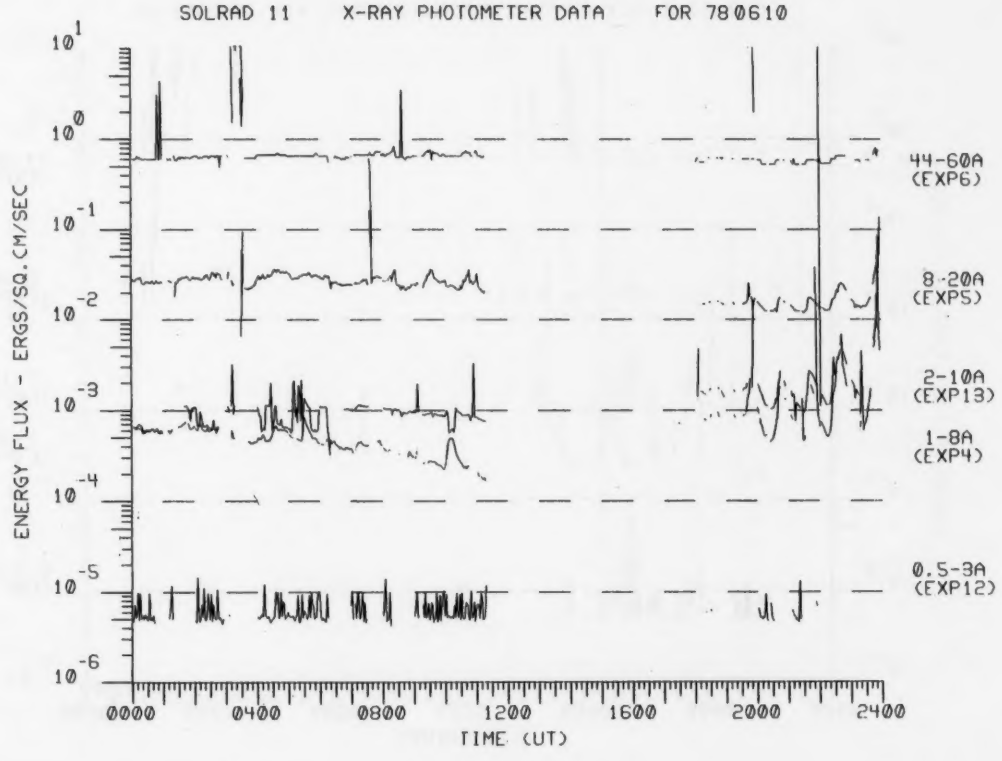
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780607



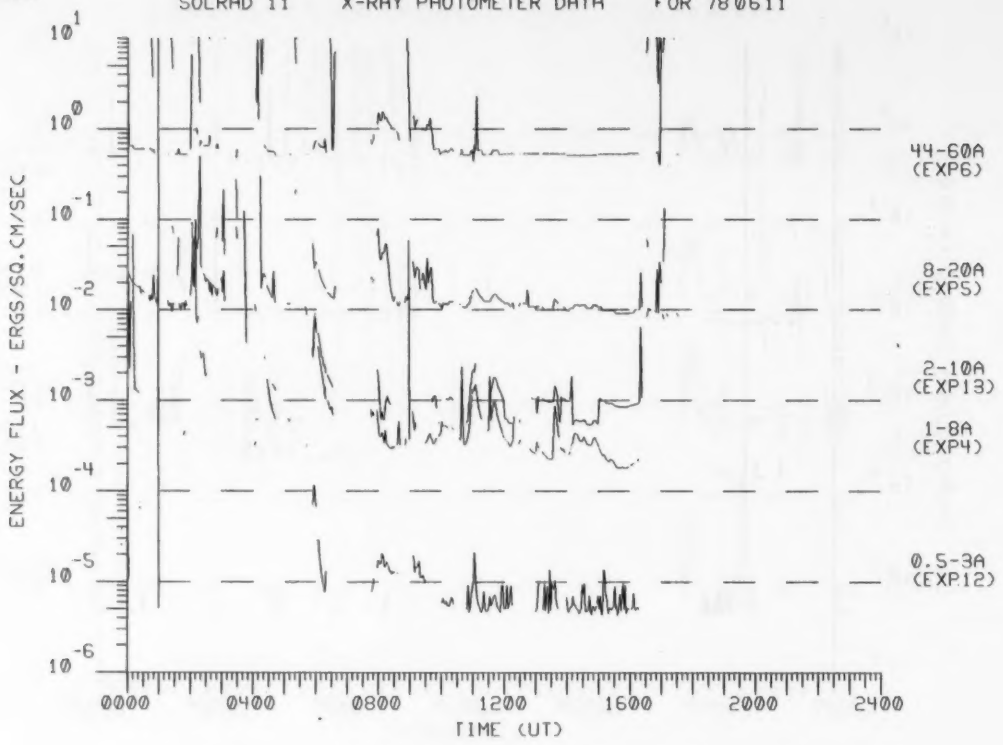
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780608



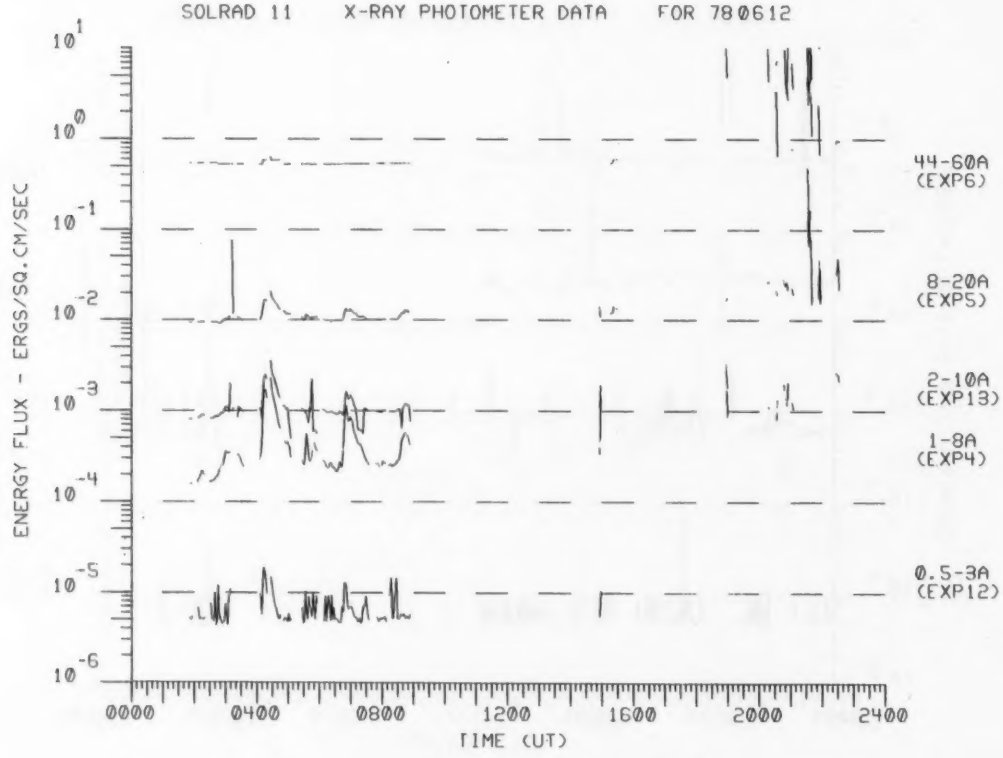

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780609
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780610
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

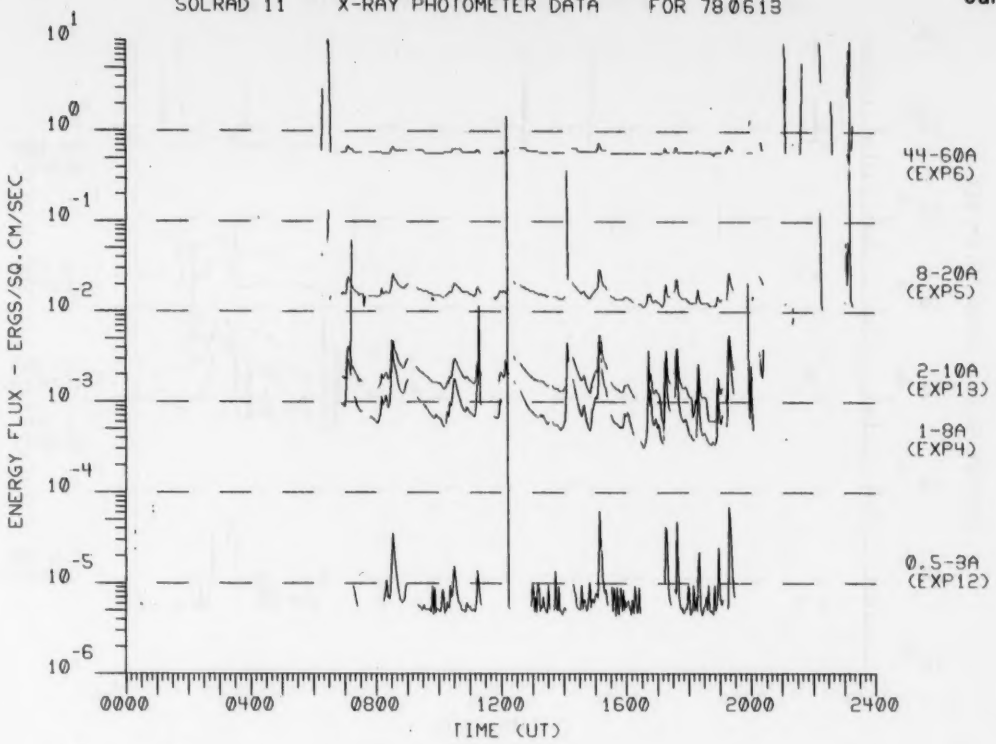
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780611



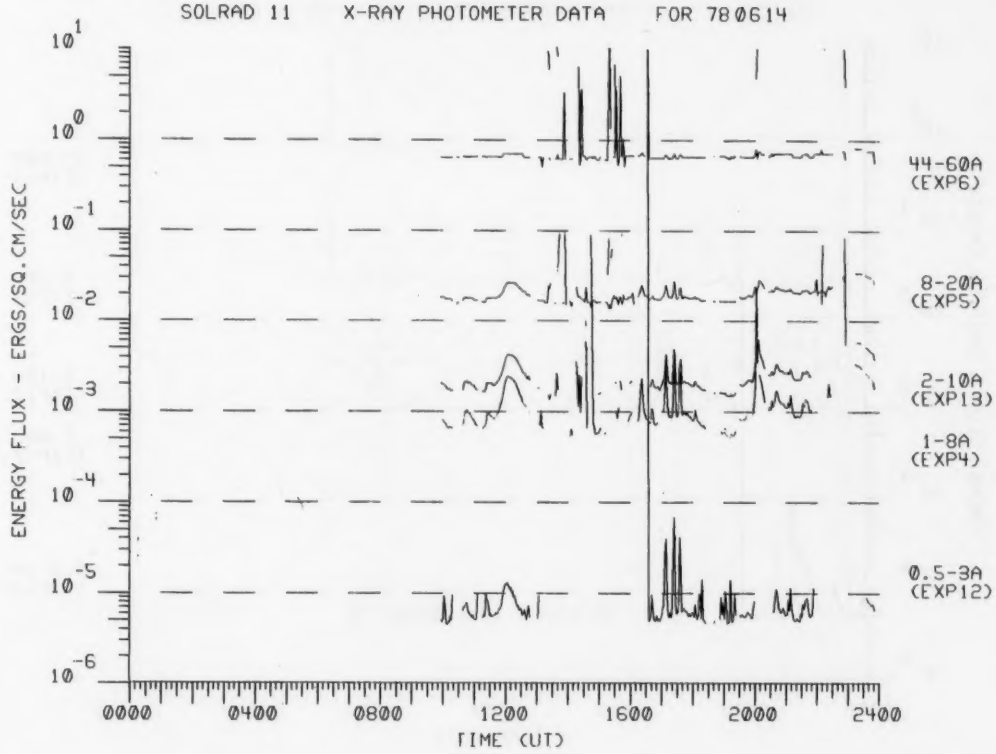
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780612



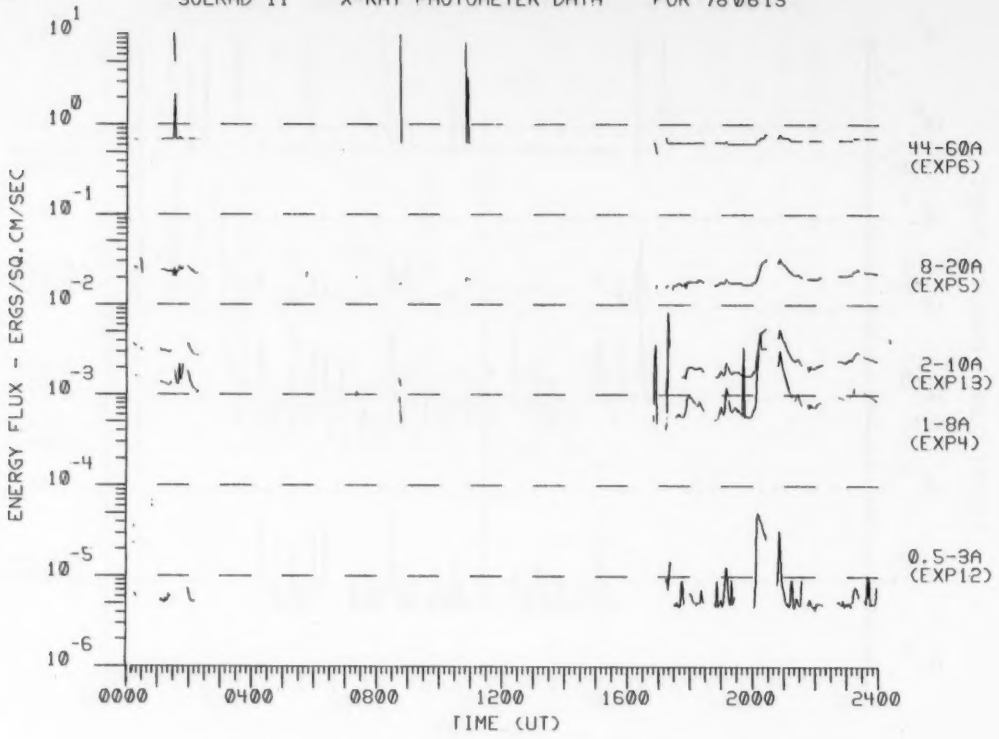
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780613



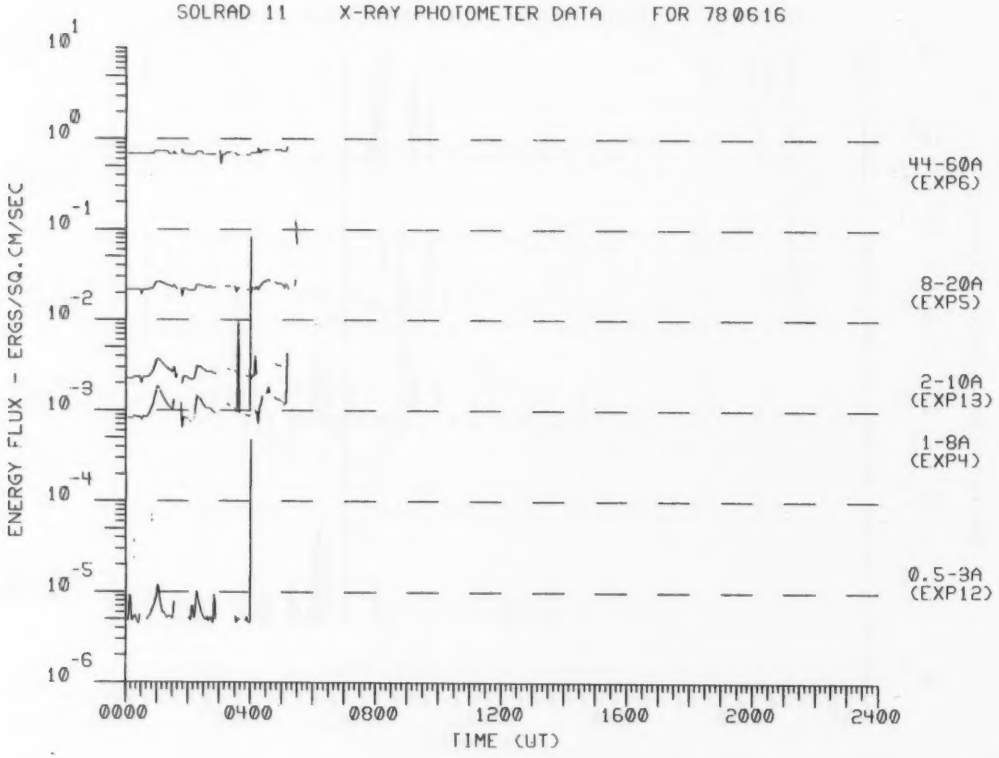
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780614



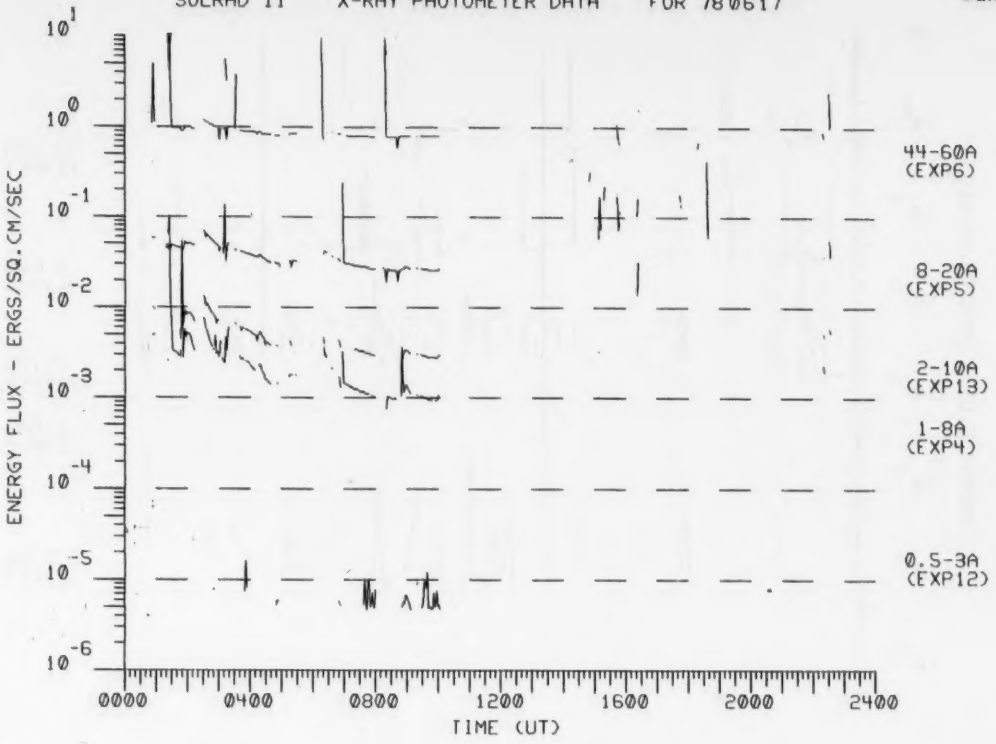
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780615



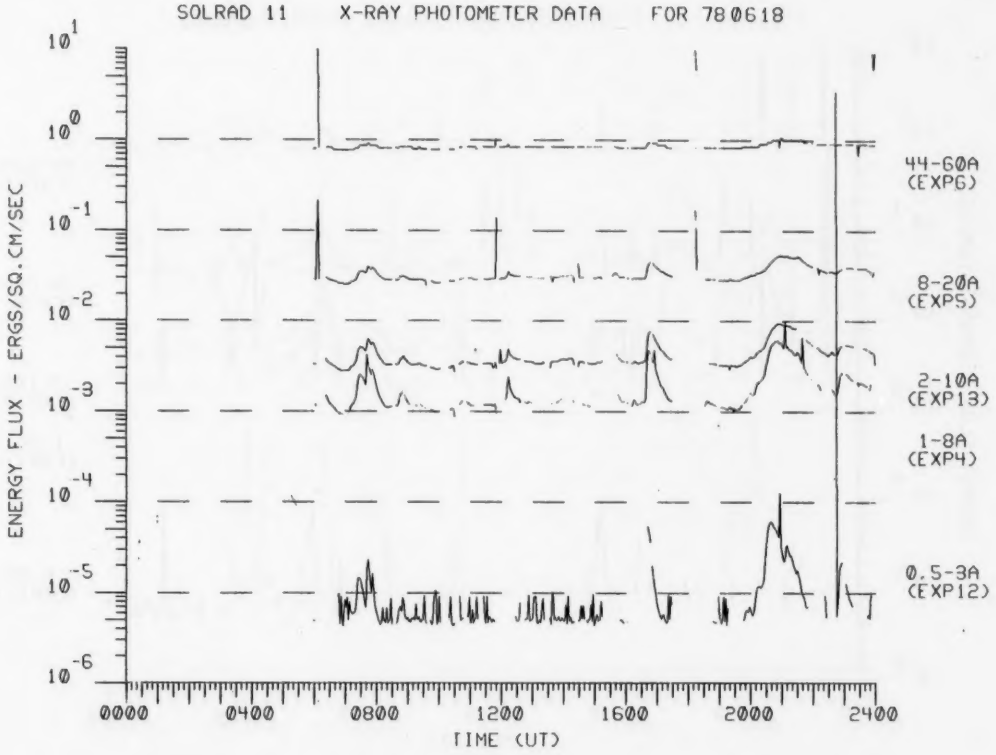
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780616



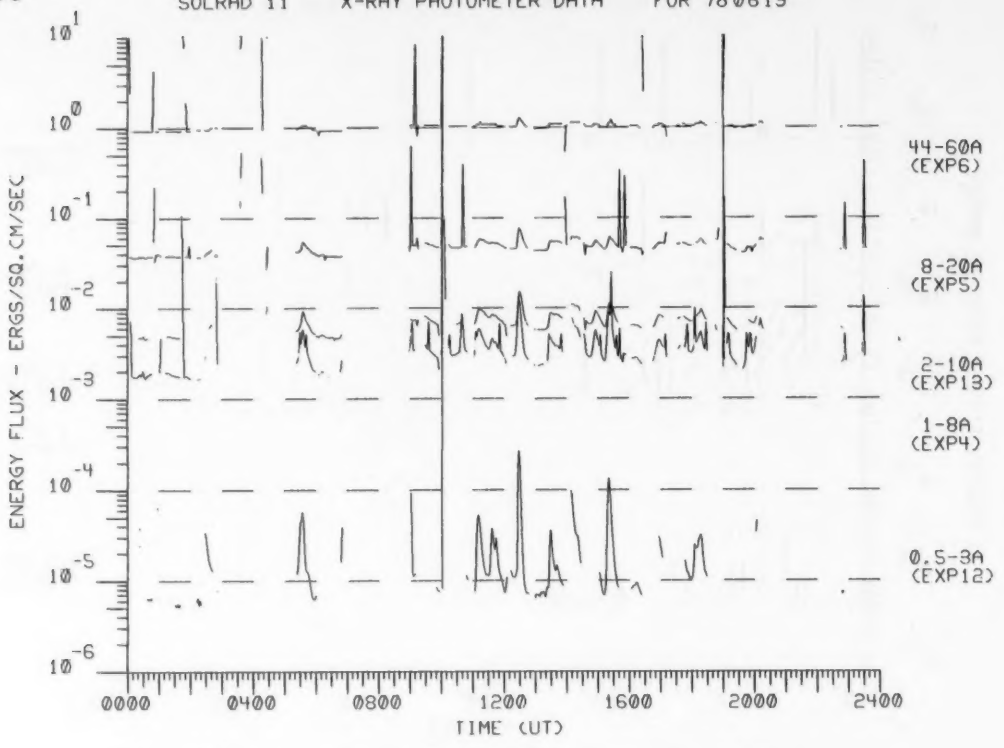
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780617



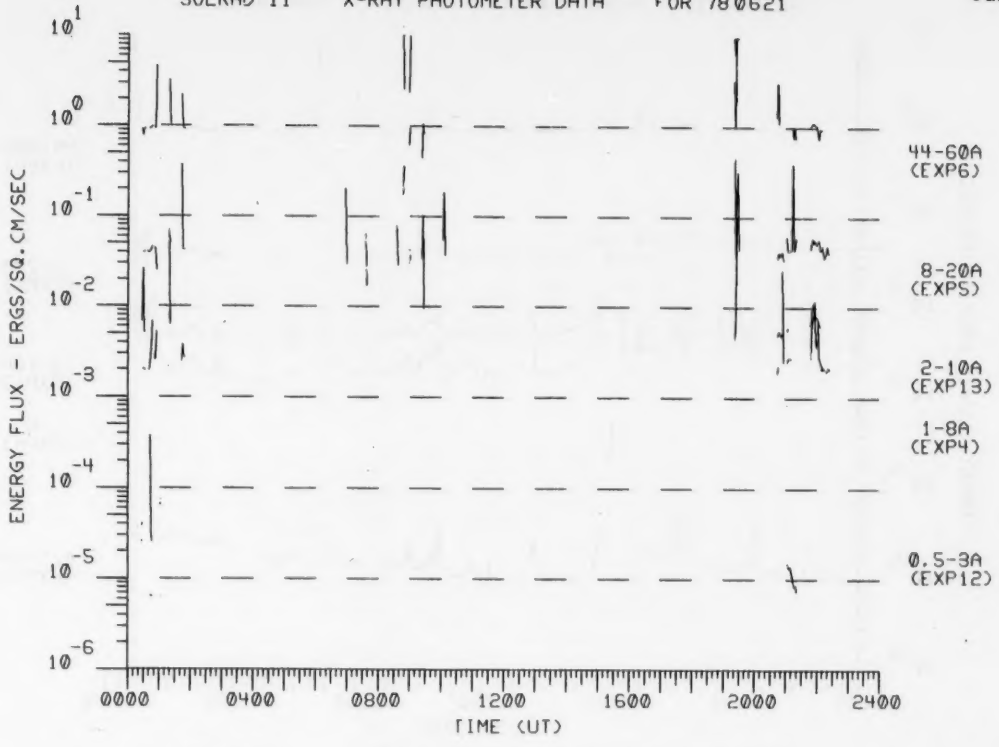
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780618

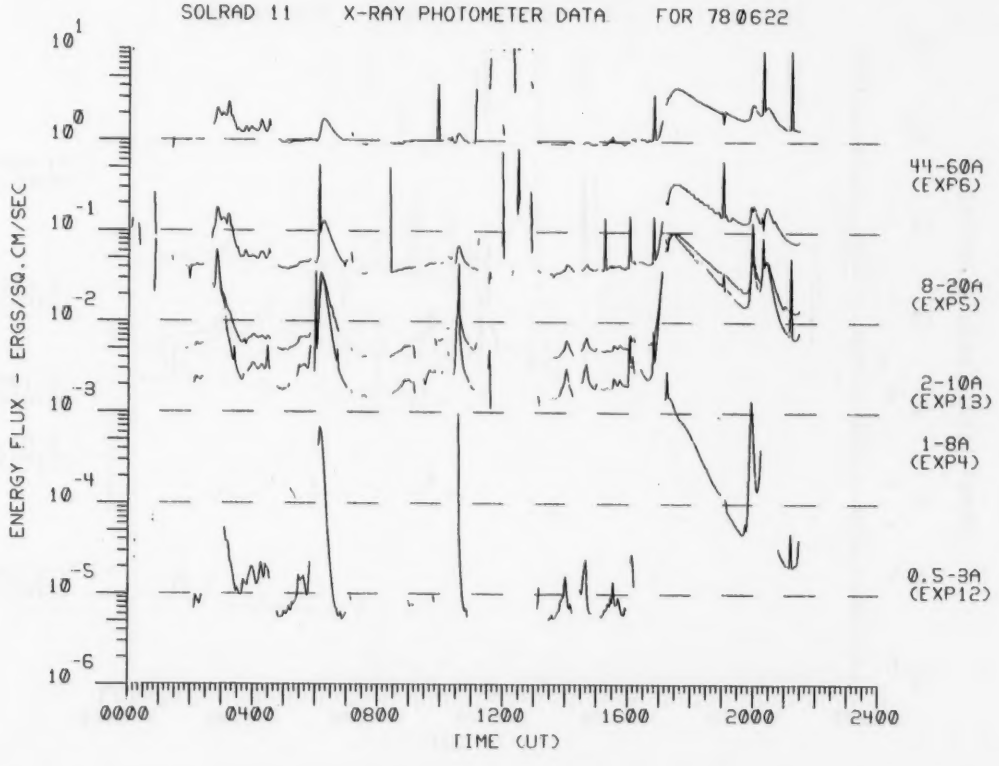


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780619

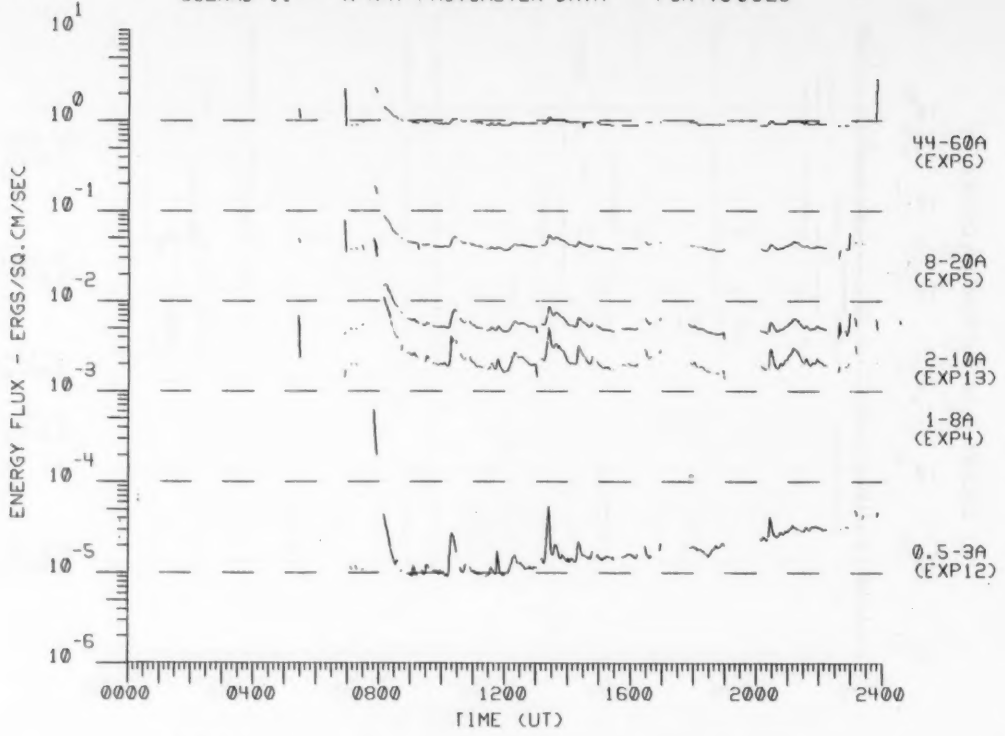


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780620

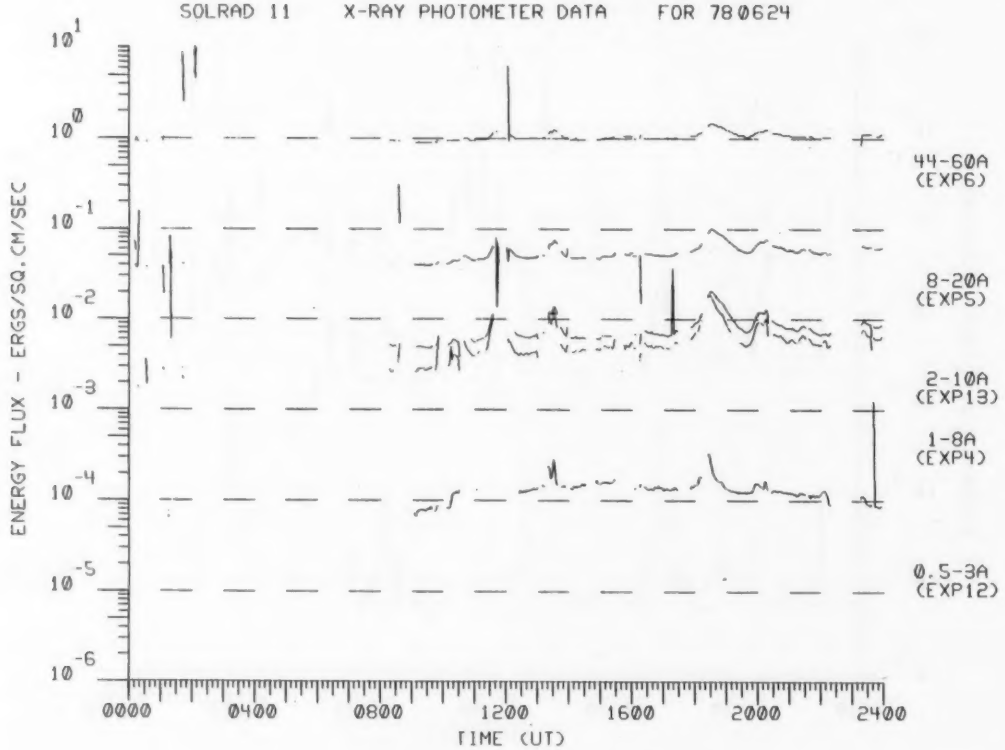

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780621
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780622
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

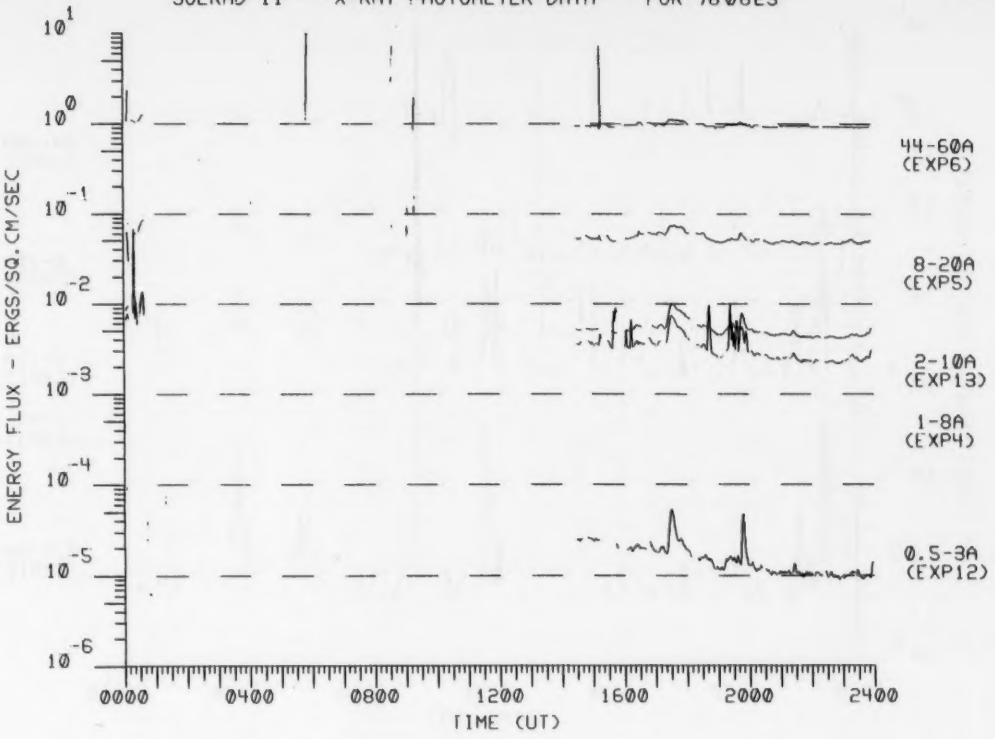
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780623



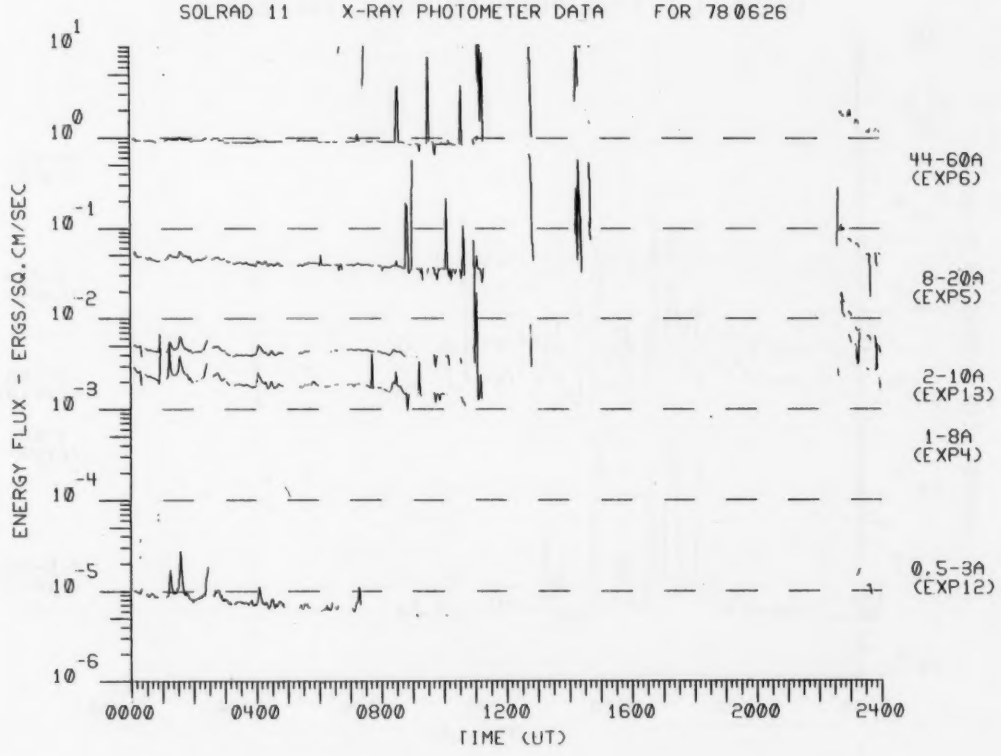
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780624



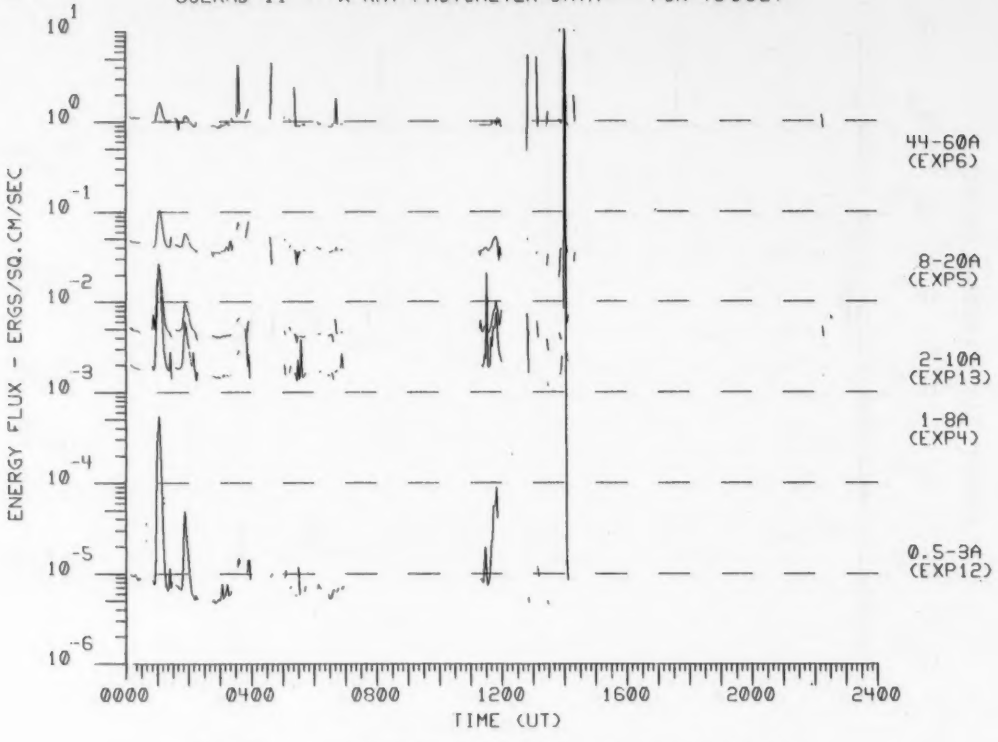
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780625



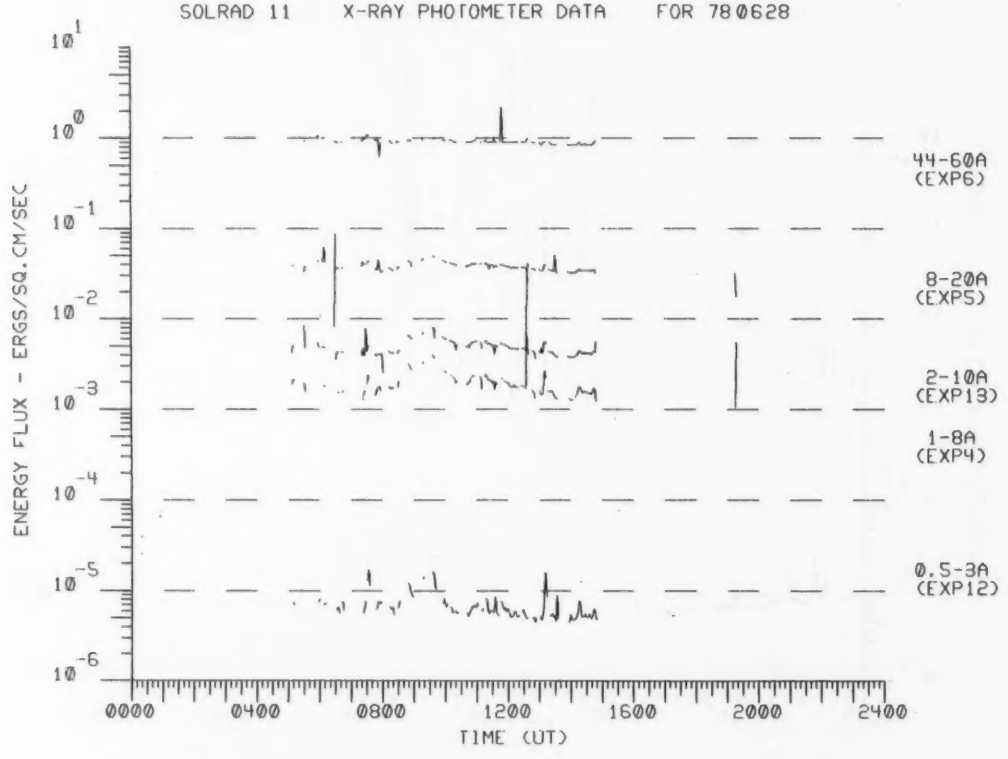
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780626



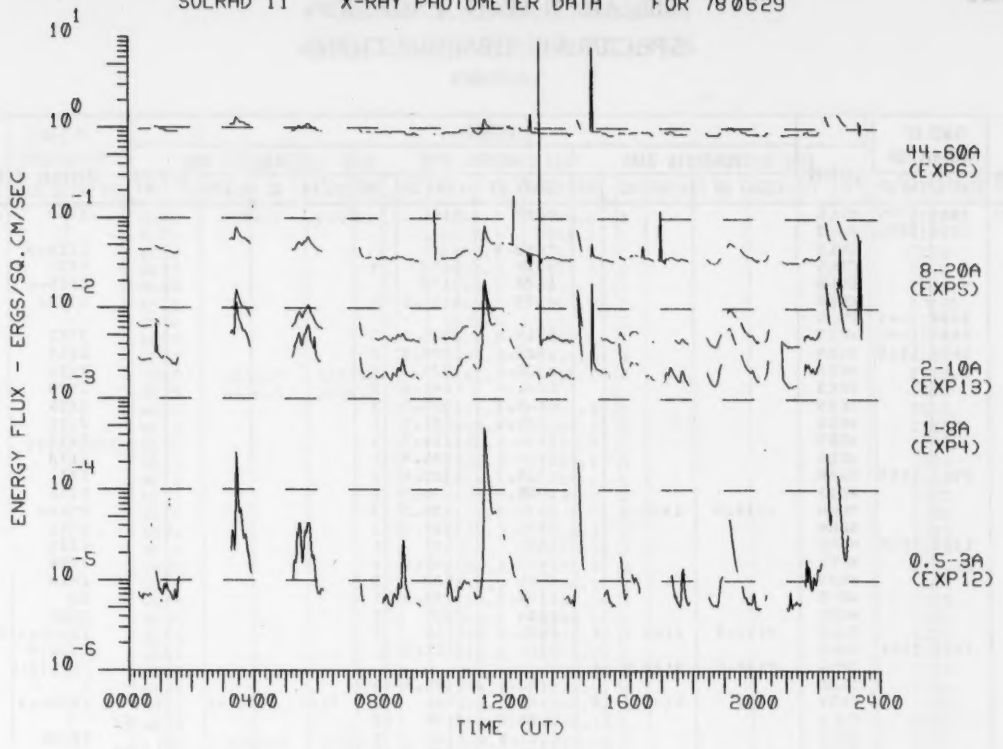
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780627



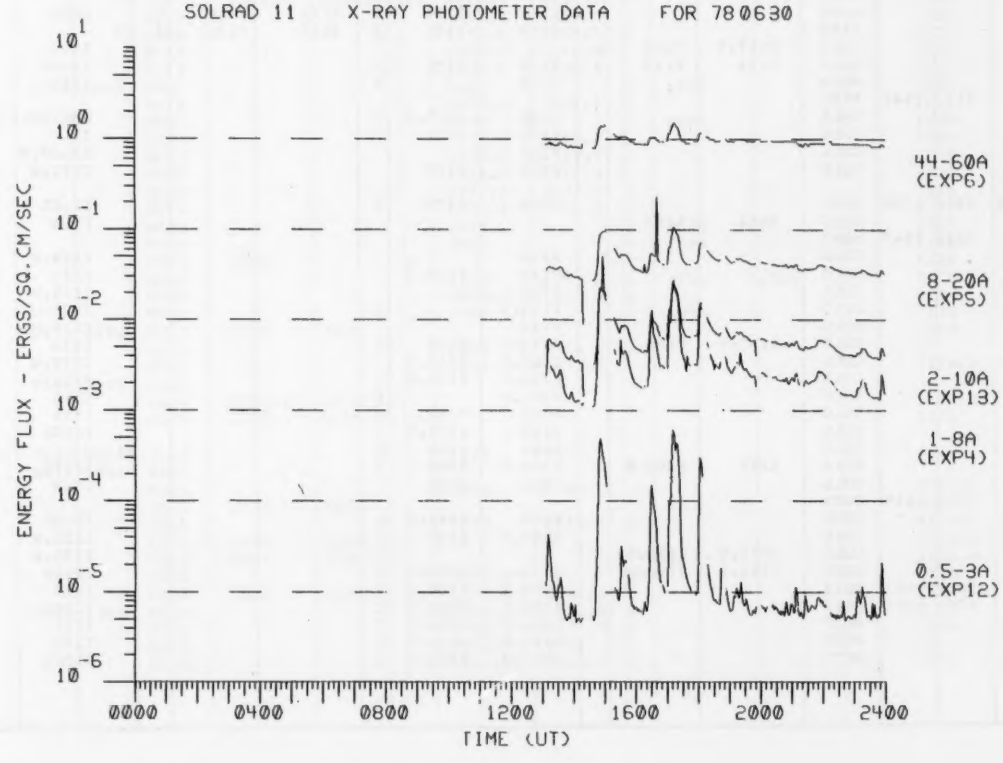
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780628



SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780629



SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780630



SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1978

JUN 1978	TIMES OF OBSERVATION START UT	END UT	STATION	EVENTS DECIMETRIC BAND START UT	END UT	INT	METRIC BAND START UT	END UT	INT	DEKAMETRIC BAND START UT	END UT	INT	SPECTRAL TYPE
01	0000	0255	CULG				0000	0103					IN,W
	0000	0951	MANI										
			CULG				0059.5						IIIB,W
			CULG				0112	0113	1				IIIG
			CULG				0128	0129					IIIG,W
			CULG				0135	0137.5	1				IIIGG
	0350	0640	CULG										
	0409	1830	WEIS				0914.6	0916.0	2				IIIG
	0430	1819	DURN				1025.1	1025.2	2				IIIG
			WEIS				1028.0	1029.3	2				IIIG
			WEIS				1041.4	1041.6	3				IIIB
			WEIS				1049.7	1050.8	2				IIIG
			WEIS				1101.4	1101.5	1				IIIB
			WEIS				1214.6	1214.7	1				IIIB
			WEIS				1324.7	1324.8	1				IIIB
	0913	2409	SGHR				1328.3	1329.4	2				III
			WEIS				1435.9	1436.9	2				IIIG
			DURN	1435.9	1436.8		1435.9	1436.8	3				IIIGG
			SGHR				1436.7	2000.0	1				IIIS
	1230	2245	HARV				1436	1437	1				IIIG
			WEIS				1449.4	1449.6	2				IIIB
			HARV				1614	1802	1				IN,W
			WEIS				1700.0	1758.0	1				IS
			HARV				2034	2035	1				IIIG
			CULG	2101.5	2106	2	2101.5	2106	3				IIIGG,V,U
	2052	2400	CULG				2101	2101.5					IIIG,W
			CULG	2102.5	2108.5	1							POSSIBLE P
			SGHR				2102.5	2106.5	3				V
			HARV	2102	2106	3	2102	2106	3	2102	2106	3	IIIGG,V
			CULG				2108.5	2135	2				II
			CULG				2111.5	2115	1				IIIGG
			SGHR				2112.0	2130.0	2				II
			HARV				2112	2114	2	2112	2114	2	UNCL
			HARV				2114	2131	3	2117	2131	3	II
			CULG	2117.5	2400								IN,W
			CULG	2118	2119	1	2118	2120	2				IIIGG
			HARV				2119		1				IIIG
	2123	2400	MANI										
			CULG				2130	2217.5	1				POSSIBLEIV
			CULG				2131	2400	1				IS
			CULG				2326						RS,DP,W
			CULG				2326	2327					IIIG,W
02	0000	0705	CULG				0000	0322	1				IS,DC
			CULG	0000	0705								IS,W
	0000	0947	MANI										
			CULG				0018						IIIB,W
			CULG				0019	0019.5	1				IIIG
			CULG				0021						IIIB,W
			CULG				0049.5		1				IIIB,U
			CULG				0106						IIIB,W
			CULG	0145.5	0146	1	0145.5	0146	1				IIIG
			CULG				0213.5	0315.5					IIIS,W
			CULG				0233.5	0234.5	1				IIIG
			CULG				0241.5		1				IIIB
			CULG				0243	0244	1				IIIG
			CULG				0254	0258.5	1				IIIGG
			CULG				0300	0304	2				II
			CULG	0301	0303.5	1	0300.5	0304	2				IIIGG
			CULG				0322	0432					IS,W
	0430	1615	DURN										
			CULG				0432	0701.5	1				IS,DC
			CULG				0509.5	0632					IIIN,W
			CULG	0525.5	0526.5	1							IIIG,U
			DURN	0714.1	0716.9	3	0714.1	0716.9	3				IIIGG
	0409	0552	WEIS				0758.2	0758.3	2				IIIB
	0724	1831	WEIS				0809.6	0813.8	2				IIIGG
			WEIS				0821.3	0822.5	2				IIIG
			WEIS				0824.0	0826.7	2				IIIG
			WEIS				0847.3	0851.5	3				IIIGG

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JUNE 1978

JUN 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
02			DURN	0848.2	0849.8	3	0848.2	0849.2	3				IIIGG
			WEIS				0910.4	0910.6	1				IIIB
			WEIS				0947.6	0947.7	1				IIIB
			WEIS				0950.4	0952.6	2				IIIG
			DURN				0954.6	0959.3	3				IIIG,N
			WEIS				0954.7	0959.9	3				IIIGG
			DURN				1021.4	1022.0	2				IIIG
			WEIS				1021.6	1022.6	3				IIIG
			WEIS				1024.4	1024.8	3				IIIG
			DURN	1101.0	1119.2		1101.0	1119.2	3				IIIG,N
			WEIS	1101.1	1101.2	2							IIIB
			WEIS				1102.2	1102.3	1				IIIG
			WEIS				1103.9	1105.0	3				IIIGG
	0912	2410	SGMR				1104.2	1104.9	2				IIIG
			WEIS				1108.6	1109.7	3				IIIG
			WEIS				1118.6	1120.0	2				IIIG
			WEIS				1134.9	1135.3	1				IIIG
			WEIS				1138.2	1138.5	2				IIIG
			SGMR				1138.3	1410.0	2				IIIS
			WEIS				1140.5	1141.8	1				IIIG
			DURN				1150.8	1154.8	2				IIIG,N
			WEIS				1150.9	1151.1	1				IIIG
			WEIS				1152.8	1153.2	1				IIIG
			WEIS				1154.1	1154.3	1				IIIG
			WEIS				1206.3	1210.7	2				IIIG
			WEIS				1213.0	1213.2	1				IIIB
			WEIS				1231.1	1231.2	1				IIIB
			WEIS				1238.3	1238.5	1				IIIB
			WEIS				1246.7	1251.3	1				IIIG
			WEIS				1255.3	1256.3	1				IIIG
			DURN	1259.4	1259.4	3	1259.4	1259.4	3				III
			DURN	1429.9	1430.2	3	1429.9	1430.2	3				IIIG
			WEIS				1455.1	1456.0	1				IIIG
			DURN				1455.5	1458.4	3				IIIGG
			WEIS				1615.8	1615.9	1				IIIG
			WEIS				1639.4	1639.8	1				IIIG
	1230	2240	HARV				1640		1	1640		1	IIIG
			WEIS				1655.0	1655.1	1				IIIB
			HARV				1656		1	1656		1	IIIB
			WEIS				1709.1	1710.8	1				IIIG
			WEIS				1712.6	1712.7	1				IIIB
			SGMR				1714.0	1715.0	1				IIIG
			WEIS				1727.8	1732.1	1				IIIG
			WEIS				1742.1	1742.6	1				IIIG
			HARV				1800		1	1800		1	IIIB
			HARV				1806		2	1806		2	IIIB
			HARV	1849		2							IIIG
			HARV				1914	1915	2	1914	1915	2	IIIG
			SGMR				1956.2	1956.3	1				III
			HARV				1956		2	1956		3	IIIB
	2050	2400	CULG	2054	2400								IN,W
			CULG				2058	2400	1				IS
			CULG				2131.5	2313.5					IIIN,W
	2140	2400	MANI										
			CULG	2257.5	2258								IIIG,W
			CULG	2306	2306.5	1							IIIG
03	0000	0710	CULG				0000	0458					IS,W
	0000	0944	MANI										
			CULG				0008	0704					IIIN,W
			CULG	0100	0705								IN,W
			CULG				0155	0159.5	1				IIIGG
			CULG	0158	0158.5								IIIG,W
			CULG	0201	0201.5								IIIG,W
			CULG				0231.5		2				IIIB
			CULG	0231	0231.5	1	0229.5	0232.5	1				IIIGG,V
	0408	1328	WEIS				0433.0	0434.0	1				IIIB
			WEIS				0456.3	0457.7	1				IIIG
			CULG				0458	0700	1				IS
			WEIS				0514.7	0519.7	2				IIIG

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JUN 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
03			CULG				0516	0538.5	1				IIIS
			WEIS				0521.8	0528.3	2				IIIG
	0525	1819	DURN				0525 E	1819	3				I,DC
			WEIS				0530.2	0538.6	2				IIIG
			WEIS				0548.4	0548.5	1				IIIB
			WEIS				0628.1	0628.3	1				IIIB
			CULG				0628						IIIB,U,W
			WEIS				0638.3	0638.4	1				IIIB
			WEIS				0702.3	0702.4	2				IIIB
			WEIS				0733.7	0733.8	1				IIIG
			WEIS				0739.9	0740.1	1				IIIB
			WEIS				0745.4	0745.5	3				IIIB
			DURN	0826.1	0826.3	3	0826.1	0826.3	3				IIIG,U
			WEIS	0826.2	0826.3	2							IIIB
			WEIS				0910.4	0910.5	2				IIIB
			WEIS				0949.4	0949.5	1				IIIB
			DURN				1205.6	1206.2	3				IIIG
			WEIS				1205.8	1206.4	3				IIIG
			WEIS	1307.8	1308.8	1							IIIG
			DURN	1307.8	1311.0	3	1307.8	1311.0	3				IIIGG
	1230	2245	HARV	1308		1							IIIG
			WEIS				1310.2	1311.1	3				IIIG
	1343	1833	WEIS										
			HARV				1736		1				I
			HARV				1826		1	1826		1	IIIB
			HARV				2031		1	2031		1	IIIB
	2050	2400	CULG	2058	2400		2100	2400					IS,W
			CULG				2120.5	2400					IIIS,W
			CULG				2142.5	2342.5	1				IIIN
	2152	2400	MANI										
	0912	2411	SGMR				2213.7	2214.6	1				IIIG
			HARV				2213	2215	2	2214	2215	2	IIIGG
			CULG	2214	2214.5	1	2213	2215	2				IIIGG
04			CULG				0000	0219					IIIN,W
	0000	0712	CULG				0000	0229					IS,W
	0000	0944	MANI										
			CULG				0219	0457					IIIS,W
			CULG				0229	0443	1				IS
	0408	1834	WEIS				0419.5	0531.5	1				IIIN
			CULG				0443	0651					IS,W
			CULG				0457	0644					IIIN,W
			WEIS	0646.2	0646.6	2	0646.2	0646.6	2				IIIG
	0430	1819	DURN	0647.1	0650.6	3	0647.1	0650.6	3				IIIGG,N
			CULG	0647	0648	1							IIIG,RS
			WEIS	0650.2	0650.5	1							IIIG
			CULG	0650	0651	1							IIIG
			DURN	1031.9	1031.9	1	1031.9	1031.9	3				III
			WEIS				1145.7	1146.0	1				IIIB
			WEIS				1150.8	1151.1	1				IIIB
			WEIS				1156.4	1156.5	1				IIIB
			DURN	1212.1	1214.4	3	1212.1	1214.4	3				IIIGG
			WEIS	1212.2	1217.5	3	1212.2	1217.5	3				IIIG
	0912	2412	SGMR				1213.0	1214.6	3				V
			WEIS				1250.9	1251.3	1				IIIB
			WEIS				1304.8	1305.4	1				IIIG
			SGMR				1305.0	1305.3	1				V
			WEIS				1308.8	1308.9	1				IIIB
			WEIS				1340.4	1341.6	3				IIIG
			WEIS				1346.3	1346.4	1				IIIB
			WEIS				1348.0	1351.4	3				IIIGG
			DURN	1348.0	1350.1	1	1348.0	1350.1	3				IIIGG
			SGMR				1349.4	1351.5	3				V
	1230	2245	HARV				1349	1350	3	1349	1350	3	IIIG
			WEIS				1412.5	1413.5	3				IIIG
			DURN	1412.7	1413.0	1	1412.7	1413.0	3				IIIGG
			SGMR				1413.0	1700.0	1				IIIS
			HARV				1413		2				IIIG
			WEIS				1417.7	1419.6	1				IIIG
			WEIS				1434.6	1434.7	1				IIIB

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JUN 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
04			DURN	1440.4	1440.8	2	1440.4	1440.8	3				IIIGG
			HARV				1441		2				IIIG
			DURN				1446.2	1446.2	1				III
			WEIS				1515.8	1515.9	2				IIIB
			DURN				1520.5	1521.0					IIIG
			WEIS				1520.6	1520.8	1				IIIG
			WEIS				1523.6	1523.7	1				IIIB
			WEIS				1638.9	1639.3	2				IIIB
			HARV				1639		2				IIIB
			WEIS				1714.7	1715.4	1				IIIG
			WEIS				1733.4	1733.7	2				IIIG
			SGMR				1733.7	1734.0	2				III
			HARV				1733		3	1733		3	IIIB
	2051	2400	CULG				2101	2244					IS,W
			CULG				2102	2227					IIIS,W
	2146	2400	MANI										
			CULG				2227	2349					IIIN,W
			CULG	2357	2358.5	1							IIIGG
05	0000	0950	MANI										
	0000	0712	CULG				0011	0609					IIIN,W
			CULG				0014	0337					IN,W
			CULG	0022	0022.5								IIIG,W
			CULG	0050.5	0056.5	1	0050.5	0056.5	1				IIIN
			CULG	0113.5	0114	1	0113.5	0114	1				IIIG
			CULG	0302.5		1	0302.5	0303	2				IIIG,V
			CULG				0304.5		1				IIIB
			CULG	0305		1	0305		2				IIIB
			CULG				0417.5	0418.5	2				IIIG,V
	0407	0531	WEIS				0417.5	0419.7	3				IIIG
	0430	0858	DURN										
			CULG				0520	0521.5	2				IIIG,V
			WEIS				0521.2	0521.4	2				IIIG
			CULG				0546	0547.5	3				IIIG,V
			CULG				0603.5	0605	2				IIIGG,V
	0605	1834	WEIS				0606.6	0606.9	1				IIIB
			WEIS				0608.8	0609.0	1				IIIB
			WEIS				0724.2	0726.2	2				IIIG
			WEIS				0941.2	0941.3	2				IIIB
			DURN				1000	1402					I
	0938	1402	DURN	1024.7	1024.7		1024.7	1024.7					III
			WEIS				1130.6	1130.9	3				IIIB
	0911	2412	SGMR				1131.7	1132.0	1				V
			WEIS				1405.6	1405.8	1				IIIB
			WEIS				1431.5	1431.7	1				IIIB
			WEIS				1542.3	1542.5	1				IIIB
	1638	1816	DURN										
			WEIS				1716.0	1716.3	1				IIIB
			SGMR				1716.2	1716.4	2				III
	1230	2245	HARV				1716		3	1716		3	IIIB
	2046	2400	CULG				2119	2400					IIIN,W
			CULG				2127	2210					IS,W
			CULG	2127	2220								IN,W
	2137	2400	MANI										
			CULG				2210	2400	1				IS,DC
			HARV				2217		1				IW
			CULG	2220	2400								IS,W
			CULG	2302	2304.5	1	2303.5	2305	1				II
06			CULG				0000	0223					IIIN,W
	0000	0255	CULG				0000	0116	1				IS,DC
	0000	0940	MANI										
			CULG	0043	0207								IN,W
			CULG				0116	0255					IS,W
			CULG				0249.5		2				IIIB
	0355	0640	CULG				0355	0640	1				IS,C
			CULG	0355	0640								IN,W
	0430	1819	DURN				0430 E	0820	1				IDC
	0407	1149	WEIS				0653.0	0911.0	2				IN
	1205	1835	WEIS				1424.4	1424.7	2				IIIB

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JUN 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
06	0911	2413	SGMR				1424.7	1425.0	1				III
			WEIS				1640.2	1640.4	1				IIIB
			WEIS				1655.5	1655.7	2				IIIG
			SGMR				1655.8	1656.1	1				III
	1400	2245	HARV				1656		2	1656		2	IIIG
			HARV				1816		1	1816		2	IIIB
	2155	2400	MANI										
			SGMR				2206.7	2207.0	1				III
			SGMR				2306.9	2307.1	1				III
	2055	2400	CULG				2330.5	2331	1				IIIB
			CULG				2341.5		1				IIIB
07	0000	0916	MANI										
	0000	0640	CULG				0151.5	0640					IS,W
			CULG				0344	0640					IIIN,W
			CULG	0425	0442								IN,W
	0430	0447	DURN										
			CULG				0636.5		1				IIIB
	0757	1834	WEIS				0949.7	0945.8	1				IIIB
	0525	1819	DURN				1630	1819 D	1				I
			WEIS				1647.3	1647.4	1				IIIB
	0911	2414	SGMR				1819.7	1819.9	1				V
	1230	2245	HARV				1820		2	1820		2	IIIG
	2056	2400	CULG				2103	2400					IIIN,W
			CULG				2110	2400					IN,W
	2121	2400	MANI										
08	0000	0947	MANI										
	0000	0643	CULG				0000	0551					IS,W
			CULG				0258.5	0259	1				IIIG
	0406	0736	WEIS										
	0430	1145	DURN										
	0910	2414	SGMR										
	1155	1322	DURN										
	0745	1836	WEIS				1735.7	1735.8	2				IIIB
	1230	2245	HARV				1736		1	1736		1	IIIB
			CULG				2155.5		1				IIIB
	2055	2400	CULG				2155	2222.5					IIIN,W
			CULG				2158		1				IIIB
09	0100	0945	MANI										
	0000	0730	CULG				0305.5		1				IIIB
			CULG				0347.5	0354					IIIN,W
			CULG				0348		1				IIIB
			CULG				0352		1				IIIB
			CULG				0403.5	0404	1				IIIG
			CULG				0418	0424.5	1				IIIGG
	0406	1307	WEIS				0422.3	0424.3	1				IIIG
			CULG				0455	0456					IIIG,W
			CULG				0649.5						IIIB,W
			WEIS				0649.6	0649.7	1				IIIB
			WEIS				0833.3	0833.4	1				IIIB
			WEIS				0842.6	0843.5	1				IIIG
			WEIS				1242.1	1243.4	3				IIIG
	0910	2415	SGMR				1242.2	1243.6	3				IIIG
	1230	2245	HARV				1242	1245	2	1242		2	IIIG
	1325	1837	WEIS										
	2031	2400	CULG										
	2145	2400	MANI										
10	0000	0935	MANI										
	0000	0730	CULG				0145.5		1				IIIB
	0910	2415	SGMR										
	0406	1837	WEIS				1112.4	1112.6	2				IIIG
	1230	2245	HARV										
	2031	2400	CULG										
	2200	2400	MANI										
11	0000	0940	MANI										
	0000	0620	CULG				0103.5						IIIB,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1978

JUN 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
11			CULG				0214.5	0217.5	1				II
	0405	0501	WEIS										
			CULG				0553.5						IIIB,W
	0635	0730	CULG				0639.5						IIIB,W
	0744	1838	WEIS										
	0910	2416	SGMR										
	1400	1817	DURN										
	2123	2400	MANI										
	1230	2245	HARV				2227	2228	2				IIIG
	2301	2400	CULG										
12	0000	0940	MANI										
	0000	0730	CULG				0047		2				IIIB
	0405	1308	WEIS										
			CULG	0430.5	0435.5	1							FAST DRIFT
	0430	1819	DURN	0431.4	0431.5	1							IIIG,RS
	0910	1740	SGMR										
	1230	2245	HARV										
	1323	1838	WEIS										
			DURN				1707.1	1707.1	2				IIIB
	2031	2400	CULG										
	2138	2400	MANI										
	1830	2416	SGMR				2335.5	2336.5	2				V
13	0000	0944	MANI										
	0000	0730	CULG				0234.5	0242	1				IIIS
			CULG				0246	0453					IS,W
			CULG				0248	0256					IIIN,W
			CULG	0316		1							IIIB
			CULG	0417.5	0418	1							IIIG
	0405	1839	WEIS	0417.8	0417.9	1	0417.8	0417.9	1				IIIB
	0431	1819	DURN										
	0910	1600	SGMR										
			WEIS				0916.8	0923.8	1				IIIG
	1230	2245	HARV										
			WEIS				1442.3	1442.4	1				IIIG
	1900	2417	SGMR										
	2031	2400	CULG	2123	2129.5	1							POSSIBLE P
	2143	2400	MANI										
			CULG	2211		1							FAST DRIFT
			CULG	2331		1							FAST DRIFT
14	0000	0942	MANI										
	0000	0730	CULG	0129	0129.5	1							FAST DRIFT
			CULG	0143	0144	1							FAST DRIFT
			CULG	0253	0254.5	1							FAST DRIFT
	0405	0441	WEIS										
	0431	1817	DURN	0440.7	0441.7	1							IIIG
			DURN	0540.2	0540.3	1							IIIG
			CULG	0559.5		1							IIIB
			DURN	0645.1	0645.9	2	0645.3	0645.5	2				IIIG
			CULG	0645	0645.5	1							IIIG
			DURN	0909.0	0909.6	3	0909.2	0909.4	3				IIIGG,RS
	0550	1839	WEIS	0909.2	0909.4	1							IIIG
	0910	2417	SGMR										
			DURN	0912.8	0912.8	2			2				III
			DURN	0936.3	0936.3	3	0936.3	0936.3	3				IIIG
	1230	2300	HARV										
			DURN	1601.5	1602.7	3							IIIGG
			DURN	1615.0	1615.1	2							III
			DURN	1620.0	1620.6	3	1620.2	1620.6	3				IIIGG
			DURN	1639.1	1641.0	3	1639.1	1639.3	3				IIIGG
			DURN	1704.8	1706.3	3							IIIGG
			DURN	1716.3	1716.5	2							IIIG
			DURN	1721.4	1724.2	3							IIIGG,RS
			DURN	1729.9	1734.7	3							IIIGG
			DURN	1801.5	1801.9	3							IIIG
	2032	2400	CULG	2132.5	2133.5	1							FAST DRIFT
	2140	2400	MANI										
15	0000	0940	MANI										

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JUNE 1978

JUN 1978	TIMES OF OBSERVATION 1978 START UT	END UT	STATION	EVENTS DECIMETRIC BAND START UT	END UT	INT	METRIC BAND START UT	END UT	INT	DEKAMETRIC BAND START UT	END UT	INT	SPECTRAL TYPE
15	0000	0732	CULG	0008	0008.5	1							FAST DRIFT
			CULG				0222.5						IIIB,W
			CULG				0301						IIIB,W
	0405	1054	WEIS										
			CULG				0653	0653.5					IIIG,W
	0427	1518	DURN	0731.3	0731.3	1							IIIB
	0910	2418	SGMR										
	1110	1840	WEIS										
	1215	2250	HARV				1944	1946	1				IIIG
	2032	2400	CULG	2102.5	2400	1							IS
	2213	2400	MANI										
16	0000	0705	CULG	0000	0356	1							IS,DC
	0000	0940	MANI							0016.2	0016.3	1	III
			CULG				0016	0024.5	1				IIIGG
			CULG	0016	0016.5	1	0016	0016.5	3	0016	0016.5	2	IIIG
			CULG	0020		1	0020		2	0020		1	IIIB
			CULG	0024		1	0024	0024.5	2	0024	0024.5	1	IIIB
			CULG				0037	0652					IIIN,W
			CULG				0344.5	0355.5	1				IIIGG
			CULG				0351	0351.5	2				IIIG
			CULG	0356	0512.5								IN,W
			CULG				0514	0516.5	1				IIIG
	0405	1652	WEIS				0515.3	0515.6	1				IIIG
			WEIS				0523.8	0523.9	1				IIIB
			CULG				0527.5		1				IIIB
			WEIS				0527.7	0527.8	1				IIIB
			WEIS				0537.7	0537.8	1				IIIB
			CULG				0538		1				IIIB
			WEIS				0615.7	0617.5	1				IIIG
			WEIS				0638.2	0638.4	2				IIIG
			CULG				0638	0638.5	2				IIIG
			WEIS				0642.3	0644.4	2				IIIG
			CULG				0642	0644.5	2				IIIG
			WEIS				0652.1	0652.2	1				IIIB
	0715	0732	CULG										
	0910	2418	SGMR										
			WEIS				1518.7	1519.5	2				IIIG
			WEIS				1524.4	1526.6	2				IIIG
	1215	2240	HARV				1526		2				IIIG
	0720	1819	DURN	1628.2	1628.2	2							III
	2139	2400	MANI										
	2032	2400	CULG				2215.5	2337					IIIS,W
			CULG				2217.5		1				IIIB
			CULG				2253	2257	1				IIIGG
			CULG	2323.5	2334.5	1							IIIB
			CULG				2331		2				IIIB
17	0000	0940	MANI										
	0000	0733	CULG				0015	0526					IIIN,W
			CULG				0016.5	0018	3				IIIG,V,U
			CULG				0524	0524.5	2				IIIG,V,U
	0425	1815	DURN				0734.4	0734.5	3				IIIG
	0910	2419	SGMR										
	1154	1217	WEIS										
	1215	2240	HARV										
	2140	2305	MANI										
	2033	2400	CULG	2222.5	2223	2	2222.5	2223	2				IIIG
	2331	2400	MANI										
18	0000	0940	MANI										
	0000	0733	CULG				0021	0447					IIIN,W
			CULG				0156		1				IIIB
			CULG				0210.5	0211	1				IIIG
			CULG				0407.5	0408.5	2				IIIG,U
			CULG				0415	0421.5	1				II
			CULG				0457	0459	1				IIIG
			CULG				0517		1				IIIB
			CULG				0651.5		1				IIIB
	1100	1841	WEIS				1109.5	1109.7	1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1978

JUN 1978	TIMES OF OBSERVATION 1978 START UT	END UT	STATION 06	EVENTS DECIMETRIC BAND START UT	END UT	INT	METRIC BAND START UT	END UT	INT	DEKAMETRIC BAND START UT	END UT	INT	SPECTRAL TYPE
18	0426	1818	OURN				1635.5	1636.0					IIIG
			WEIS				1727.6	1727.8	2				IIIB
	1215	2245	HARV	1745	1747	2							IIIG
	2033	2400	CULG				2119	2151					IS,W
	2145	2400	MANI										
			CULG	2147.5	2148.5	2	2148	2149.5	2				IIIG,V,U
	0910	2419	SGMR				2147.6	2148.3	2				IIIG
			HARV				2147	2148	2	2147	2148	2	IIIG
			CULG				2154						IIIB,W
			CULG				2155.5		1				IIIB
			CULG				2223	2224					IIIG,W
			CULG				2238.5	2239	2				IIIB
19	0000	0733	CULG				0000.5	0002	1				IIIG,V
			CULG	0015	0015.5	1							FAST DRIFT
			CULG				0035.5	0552					IIIN,W
			CULG				0140.5		1				IIIG
			CULG	0156.5	0157	1							FAST DRIFT
	0000	0944	MANI							0257.8	0258.0	1	III
			CULG				0259	0300	3				IIIG
			CULG				0331.5	0332	1				IIIB
			CULG				0402	0402.5	1				IIIG
	0427	1817	OURN										
			CULG	0430.5	0431	1							IIIG
	0405	1632	WEIS				0445.0	1045.0	3				CONT
			CULG				0535		1				IIIB
			WEIS				1223.7	1225.0	2				IIIG
	0910	2419	SGMR				1224.0	1225.1	1				IIIG
			WEIS				1510.3	1511.7	3				IIIG
			SGMR				1510.6	1511.6	2				V
	1215	2305	HARV				1510	1511	2	1510	1511	2	UNCL
	1646	1841	WEIS										
	2033	2400	CULG				2138	2325.5					IN,W
	2142	2400	MANI										
			CULG				2153	2155					IIIGG,W
20	0000	0943	MANI										
	0000	0733	CULG				0007	0600					IS,W
			CULG				0012.5	0013					IIIB,U,W
			CULG				0012	0012.5	1				IIIB
			CULG	0134	0607.5								IN,W
			CULG	0510.5	0511.5		0510.5						IIIG,W
	0405	1842	WEIS				0540.0	1045.0	3				CONT
	0449	1816	OURN	0656.6	0656.9	1							IIIG
			OURN	0811.2	1811.4	2							IIIG
	0910	2419	SGMR										
	1215	2245	HARV										
	2142	2400	MANI										
	2034	2400	CULG				2156	2359					IIIN,W
			CULG				2159	2200	1				IIIG
21	0000	0935	MANI										
	0000	0715	CULG	0032	0032.5	1	0032	0032.5	1				IIIG
			CULG	0041.5	0042		0041.5	0042					IIIG,W
			CULG				0053	0437.5					IN,W
			CULG				0057	0058	1				UNCLF,SL D
			CULG	0111	0116		0110	0116					IIIGG,W
			CULG				0111	0111.5	2				IIIG
			CULG				0115.5		1				IIIB
			CULG				0122.5	0132	2				II
			CULG	0124.5		1							IIIB
			CULG	0126		1	0126		2				IIIG
			CULG				0143	0550					IIIN,W
			CULG				0153.5	0154.5	1				IIIG,U
			CULG	0249.5		1	0249.5		1				IIIB,RD
			CULG	0322.5	0323	1							IIIG
			CULG	0350	0350.5	1	0350	0350.5	1				IIIG
	0427	1819	OURN				0427 E	1819 D	1				I
			OURN	0438.5	0438.8	1							IIIG
			CULG	0441	0704	1							IN

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JUNE 1978

JUN 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
21	0405	0815	WEIS				0529.8	0531.4	1				IIIG
			DURN				0529.9	0533.4	3				IIIGG
			CULG	0531	0531.5	1	0530.5	0531.5	1				IIIG
			CULG	0533	0533.5	1	0533	0533.5	1				IIIG
			WEIS				0538.0	0538.4	2				IIIG
			DURN				0538.1	0538.5	3				IIIG
			CULG	0538	0538.5	1	0538	0538.5	1				IIIG
			DURN				0546.4	0547.7	1				IIIG
			CULG	0547.5		1	0547.5		1				IIIB
			DURN	0852.2	0852.5	1	0852.2	0852.5	2				IIIG
	0910	2420	SGMR										
	1215	2245	HARV										
			DURN				1314.4	1314.9	3				IIIG
	0845	1842	WEIS				1657.5	1657.7	1				IIIG
	2058	2400	CULG	2103	2400	1							IS
			CULG				2115	2400					IN,W
	2150	2400	MANI										
			CULG				2232	2232.5					IIIB,W
22	0000	0657	CULG	0000	0657		0000	0657					IS,W
	0000	0944	MANI										
			CULG				0005.5	0607.5					IIIN,W
	0405	1206	WEIS										
	0427	1819	DURN				0427 E	1819 D	1				I,DC
			DURN	1339.5	1339.8	1	1339.5	1339.8	3				IIIG
	1224	1842	WEIS	1340.7	1341.4	2	1340.7	1341.4	2				IIIG
	0910	2420	SGMR				1340.8	1341.3	1				III
	1215	2250	HARV				1341		2				IIIG
			DURN	1654.0	1654.8		1654.0	1654.8	2				IIIGG
			HARV				1654	1655	1				IIIG
			DURN	1655	1812	3	1655	1812	3				IV, F
			WEIS	1657.0	1703.0	2	1657.0	1703.0	2				IIIGG
			DURN	1657.5	1658.3	3	1657.5	1658.3	3				IIIGG
			SGMR				1658.0	1706.3	2				V
			SGMR				1658.8	1719.0	3				IV
			HARV				1658	1704	3	1659	1704	3	IIIGG,V,U
			HARV	1658	1711	3							IVN
			WEIS	1703.0	1756.0	2	1703.0	1756.0	2				IVDM,FLUCT
			WEIS				1703.0	1755.0	2				IVM
			WEIS	1703.0	1708.0								DM-SPIKES
			HARV				1704	1724	3	1704	1724	3	II
			HARV				1704	1800	3	1704	1800	3	I,III,C
			HARV				1710	1716	3	1710	1716	3	III,RS
			SGHR				1719.0	2420.00	2				CONT
			HARV	1719	1810	3							IV
			HARV				1735	1748	3	1739	1748	3	II
			HARV				1800	2014	1	1800	2014	1	IN,IIIN
			HARV				1942	1943	2	1942	1943	2	IIIG
			HARV				2014	2100	2	2014	2100	2	IN,IIIN
			HARV				2059	2100	3	2059	2100	3	IIIG
			HARV				2100	2202	1				IN,IIIN
	2100	2400	CULG	2105	2400	1	2110	2320.5	1				IS,DC
			CULG				2110	2400					IIIS,W
			CULG				2131	2211.5	1				IIIS
	2151	2400	MANI										
			HARV				2211		2				
			CULG				2229	2233	1				POSSIBLEII
			CULG				2306	2330	1				IIIS
			CULG				2320	2400					IS,W
23			CULG				0000	0127					IS,W
	0000	0700	CULG	0000	0235	1							IS
	0000	0837	MANI										
			CULG				0004.5	0219.5					IIIS,W
			CULG				0051		1				IIIB
			CULG				0127	0529	1				IS
			CULG				0215.5	0216.5	2				IIIG
			CULG				0219.5	0700	1				IIIS
			CULG	0235	0607.5	2							IS
			CULG				0302		1				IIIB

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SPECTRAL OBSERVATIONS

JUNE 1978

JUN 1978	TIMES OF OBSERVATION START UT	~~1978~~ END UT	STATION 06	EVENTS DECIMETRIC BAND START UT	END UT	INT	METRIC BAND START UT	END UT	INT	DEKAMETRIC BAND START UT	END UT	INT	SPECTRAL TYPE
23			WEIS				0422.0	0622.0	2				IN
	0405	1834	WEIS				0422.0	0815.0	2				I
	0427	1816	DURN				0427 E	1816 D	2				I,DC
			CULG				0529.5	0611.5	2				IS
			CULG	0607.5	0700	1							IS
			CULG				0611.5	0700	1				IS
			WEIS				0800.0	1010.0	2				IIIN
	0911	2420	SGMR										
			DURN				0927.5	0927.7	3				IIIG
			DURN	0929.4	0929.5	3	0929.4	0929.5	3				IIIG
			DURN	1547.9	1548.2	2	1547.9	1548.2	2				IIIG
			DURN	1553.8	1554.6	3	1553.8	1554.6	3				IIIGG
			WEIS	1553.8	1554.5	1							IIIG
	1215	2250	HARV	1554	1555	2							IIIG
			DURN	1646.3	1647.0	3	1646.3	1647.0	3				IIIGG
			WEIS	1646.4	1646.6	1							IIIG,U
			HARV	1646	1647	1	1646	1647	1				IIIG
			HARV				1948	1949	2				IIIG
			HARV	2001		2							IIIG
			HARV	2025		1	2023	2025	1				IIIG
	2100	2400	CULG	2105	2400	1							IS
			CULG				2118	2313					IN,W
			CULG				2136.5	2400					IIIN,W
			CULG	2137.5	2138	2							IIIG
			CULG	2138.5	2139	1	2138.5	2139	2				IIIG
			HARV	2138		2	2138	2139	2				IIIG
	2144	2400	MANI										
			CULG				2313	2400	1				IS,W
24			CULG	0000	0700		0003	0226.5					IIIN,W
	0000	0700	CULG	0000	0700		0000	0043					IS,W
	0000	0948	MANI										
			CULG				0043	0227	1				IS,DC
			CULG				0116	0118	2				DC
			CULG	0135	0135.5		0135	0135.5					IIIG,W
			CULG	0147	0147.5								IIIG,W
			CULG				0226.5	0700					IIIS,W
			CULG				0227	0544	2				IS,DC
			CULG	0509	0509.5	1	0509	0509.5	1				IIIG
			CULG				0544	0700	1				IS,DC
			CULG				0550.5		1				IIIB
	0544	1843	WEIS				0550.6	0550.7	1				IIIB
			WEIS				0603.5	0603.9	2				IIIG
			CULG				0603.5		2				IIIB
			WEIS				0638.6	0638.6	1				IIIB
			WEIS				0648.0	0648.9	1				IIIG
			WEIS				0701.8	0702.2	3				IIIG
			WEIS	0706.6	0708.8	3	0706.6	0708.8	3				IIIG,RS
			WEIS				0814.5	0814.7	2				IIIG
	0924	1819	DURN				0924 E	1819 D	1				I,DC
			WEIS				1023.3	1023.4	1				IIIG
			WEIS				1033.2	1033.3	2				IIIB
			WEIS	1037.2	1041.8	2	1037.2	1041.8	2				IIIGG
			DURN	1037.3	1042.0	1	1037.3	1042.0	3				IIIGG
			WEIS				1217.6	1218.2	3				IIIG
			DURN	1217.8	1218.3	1	1217.8	1218.3	3				IIIG
	1215	2245	HARV	1218		1	1218		2				IIIG
			WEIS				1305.0	1305.3	2				IIIG
			DURN				1305.1	1305.3	2				IIIG
			WEIS				1439.9	1440.4	2				IIIG
			DURN				1440.1	1440.5	2				IIIG
			WEIS	1500.8	1501.9	3	1500.8	1501.9	3				IIIG
			DURN	1501.0	1502.1	1	1501.0	1502.1	3				IIIG
			WEIS	1505.5	1507.7	2	1505.5	1507.7	2				IIIG
			DURN	1505.6	1507.9	3	1505.6	1507.9	3				IIIGG
			WEIS				1613.1	1613.3	2				IIIG
	0911	2420	SGMR				2018.8	2019.6	1				IIIG
	2100	2400	CULG				2105	2400	1				IS,DC
			CULG				2129	2400					IIIN,W
			CULG	2133.5	2134	1							FAST DRIFT

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JUN 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
24	2136	2400	MANI										
			CULG	2141	2400								IN,W
25	0000	0700	CULG				0000	0100	1				IS
			CULG				0002.5	0115	1				IIIN
			CULG	0025	0051								IS,W
			CULG	0051	0114								IS,DC
			CULG			1	0100	0114	2				IS,DC
			CULG				0114	0530	2				IS,C,DC
			CULG	0114	0700	1							IS,C
			CULG				0115	0523.5	2				IIIS
	0000	0930	MANI							0213.1	0215.7	1	III
	0405	0746	WEIS				0407.0	0544.0	2				IS,DC
			WEIS				0407.0	0720.0	2				IIIS
			CULG	0426	0505	1	0420	0505	1				SCINTILLAT
	0428	1819	DURN				0428 E	1819 D	1				I,DC
			DURN	0437.5	0437.9	2	0437.5	0437.9	2				IIIG
			CULG	0437.5		2	0437.5		2				IIIB
			CULG	0505		1							IS
			CULG				0523.5	0650.5	1				IIIS
			CULG				0530	0655	1				IS,DC
			CULG				0609		2				IIIB
			DURN	0739.8	0740.1	1	0739.8	0740.1	1				IIIG
			DURN	0801.4	0801.8	1	0801.4	0801.8	1				IIIG
	0803	1843	WEIS				0845.0	0847.5	2				IIIG
	0911	2420	SGMR										
			DURN	1008.8	1009.1	2	1008.8	1009.1	2				IIIG
			WEIS				1031.8	1032.0	2				IIIB
			WEIS				1048.0	1049.2	2				IIIG
			WEIS				1054.3	1054.4	1				IIIG
			DURN	1105.4	1105.9	1	1105.4	1105.9	2				IIIG,RS
			WEIS				1135.5	1136.7	1				IIIG
	1215	2245	HARV										
	2105	2400	CULG				2118.5	2400					IN,W
			CULG				2143	2400					IIIN,W
			CULG				2219		2				IIIB
			CULG				2224	2224.5	2				IIIB,U
			CULG	2244.5	2333	1	2231	2325	1				IS
	2150	2400	MANI							2304.6	2304.8	1	III
			CULG				2306.5	2307.5	2				IIIG
			CULG	2323		1							IIIB
			MANI							2349.9	2351.0	1	III
26	0000	0945	MANI										
	0000	0708	CULG				0000	0648					IIIN,W
			CULG				0009	0318					IN,W
			CULG	0029	0705	1							IN
			CULG	0112		1	0112	0113.5	1				IIIG,U
			CULG				0117.5		1				IIIB
			CULG	0117.5	0119	1							DC
			CULG				0128.5	0129	3				IIIG
			CULG				0152.5	0153	1				IIIB,U
			CULG				0203	0203.5	1				IIIG
			CULG	0222.5	0223.5	1							IIIG
			CULG				0318.5	0335	1				IS
	0428	0844	DURN				0428 E	0844 D	1				I,DC
			CULG				0625	0708	1				IS
	0407	1405	WEIS				0734.3	0736.5	3				IIIG
			WEIS				0749.8	0750.3	3				IIIG
			WEIS				0824.0	1828.0	2				III
			WEIS				0908.8	1840.8	3				I
			WEIS				1126.6	1127.3	3				IIIG
	0913	2420	SGMR				1126.8	1127.0	1				III
			WEIS				1203.7	1203.9	3				IIIB
			WEIS				1207.3	1207.7	3				IIIG
			WEIS				1211.9	1212.1	1				IIIG
			WEIS				1217.3	1229.5	3				IIH,B,HARM
			SGMR				1217.5	1230.5	2				II
	1215	2250	HARV				1218	1220	1				I
			SGMR				1249.6	1249.9	1				III

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JUN 1978	TIMES OF OBSERVATION START UT	END UT	MONTH STATION	EVENTS DECIMETRIC BAND START UT	END UT	INT	METRIC BAND START UT	END UT	INT	DEKAMETRIC BAND START UT	END UT	INT	SPECTRAL TYPE
26			SGMR				1334.0	2420.0D	1				CONT
			HARV				1340		1				IIIG
			HARV				1349		1				IIIB
	1413	1843	WEIS	1430.6	1441.0	3	1430.6	1441.0	3				IIIGG
			HARV				1431		2				IIIG
			HARV	1434	1439	3	1434	1439	3	1437	1439	3	IIIGG
			SGMR				1436.5	1443.0	3				V
			WEIS				1442.5	1453.5	3				II, HARM
			SGMR				1443.0	1453.8	3				IV
			SGMR				1443.0	1449.0	3				II
			HARV				1443	1454	3	1444	1454	3	II
			HARV				1443	1454	3	1443	1454	3	H
			HARV				1454	1520	1				IC,IIIN
			HARV				1520	1540	2	1520	1540	2	IC,IIIN
			WEIS	1533.0	1658.0	2							IVP
			WEIS				1537.2	1550.0	3				IIIGG
			SGMR				1537.4	1553.0	3				V
			HARV				1537	1541	3	1537	1541	3	IIIGG
			HARV				1540	2220	3	1540	2220	3	IC,IIIS
			WEIS				1545.0	1700.0	3				IVDM-SPIKE
			SGMR				1546.5	1645.5	3				IV
			DURN	1605	1736	2	1605	1736	3				IV
			SGMR				1645.5	1940.0	3				IIIS
			WEIS	1732.5	1736.5	3	1732.5	1736.5	3				IIIG
			HARV	1736		3	1733	1736	3	1733	1736	3	IIIGG,V
			WEIS	1758.6	1803.2	3	1758.6	1803.2	3				IIIG
	1605	1819	DURN	1759.3	1802.9	2	1759.3	1802.9	2				IIIGG
			HARV	1759	1803	3	1758	1803	3	1758	1803	3	IIIGG
			HARV				1910	1950	3	1910	1950	3	IIIGG,RS
	2101	2400	CULG				2107	2117	2				IS
			CULG				2108	2136	1				IIIS
			CULG				2117	2400	2				IS,C
			CULG				2118.5		2				IIIB
			CULG				2136	2400	2				IIIS
			CULG	2140	2140.5								IIIG
			CULG	2204.5	2207.5	2	2204.5	2209	3	2205	2209.5	2	IIIGG,V
			HARV	2205	2207	3	2205	2207	5				IIIGG
	2140	2400	MANI							2206.0-	2206.3	1	III
			CULG	2207.5	2217								IIIGG
			CULG	2209.5	2210.5	2	2210	2218	2				II
			CULG	2209	2209.5								UNCLF
			HARV				2209	2213	3				UNCL
			HARV				2220	2250	2	2220	2250	2	I,IIIS
			CULG				2243.5	2244.5	2				IIIG,V
			HARV				2244		3	2244		3	IIIB
			CULG							2327	2334		IIIN
			MANI							2340.3	2342.0	2	III
			CULG	2340	2344.5	1	2339.5	2342.5	2	2340	2342	2	IIIGG,V
27			CULG				0000	0154					IIIS,W
	0000	0700	CULG				0000	0410	1				IS,C,DC
			CULG				0001.5	0002	1	0001.5			IIIG
			CULG	0059	0106.5	2	0059	0104.5	3	0100.5		3	IIIGG,V
	0000	0940	MANI							0100.7	0102.6	2	IIIG
			CULG				0107	0120	2				II
			CULG	0111	0114	1	0111.5	0113	2	0111.5	0113	1	IIIGG
			CULG	0133.5	0134		0133	0134		0133.5			IIIG
			CULG				0154.5	0253					IIIS
			CULG				0253	0700					IIIS,W
			CULG				0307	0309.5	2				IIIG,UNCLF
			CULG				0410	0700	1				IS,DC
	0428	1820	DURN				0428 E	1820 D	1				I,OC
			CULG	0430	0700								IS
	0405	1843	WEIS				0449.0	0449.8	2				IIIG
			CULG				0449	0450	1				IIIG
			WEIS	0540.0	1645.0	2	0540.0	1645.0	2				IN
			WEIS				0806.5	1713.0	2				IIIN
			DURN				1038.7	1038.9	2				IIIG
	0912	2420	SGMR				1134.0	1144.5	2				V
	1215	2245	HARV				1236		1				IIIG

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JUN 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
27			SGMR				1501.0	2420.00	1				CONT
			HARV				1510	1605	1				IN
			HARV				1605	1650	2				I
			HARV				1637		3	1637		3	IIIB
			HARV				1645	1826	1				IIIN,W
			HARV				1944		2	1944		2	IIIB
			HARV				2004		3	2004		3	IIIG
	2101	2400	CULG				2106	2400					IIIN,W
			CULG				2109	2157					IS
	2135	2400	MANI										
			CULG				2157	2400					IS,W
			CULG	2159	2200.5		2159	2200.5					IIIGG
			CULG				2238						IIIB
28			CULG				0000	0215					IIIN,W
	0000	0700	CULG				0000	0223					IS,W
			CULG				0042.5	0043					IIIG
			CULG				0127.5	0128					UNCLF
			CULG				0215.5	0700					IIIS,W
			CULG				0223	0700					IS,DC
	0000	0935	MANI							0245.5	0247.4	2	IIIG
			CULG	0245	0247	3	0245.5	0248.5	3	0246	0248.5	3	IIIGG,V
			CULG							0247	0256		S.W.F.
			CULG	0247	0250	3	0247	0316	3	0254	0258.5	3	II
			MANI							0252.0	0258.0	2	IIIG
			CULG	0252.5	0306								IN
			CULG	0253	0253.5								IIIG
	0408	0421	WEIS										
	0443	1843	WEIS				0909.3	0909.4	1				IIIB
			WEIS				0912.8	0913.2	1				IIIG
			WEIS				0936.9	0937.2	1				IIIB
	0428	1620	DURN				1100	1200	1				I
	1215	2245	HARV				1230		1				IW
			WEIS				1305.0	1305.2	1				IIIB
			WEIS				1522.5	1522.6	2				IIIB
			WEIS				1827.2	1827.4	2				IIIG
			HARV				1827		1				IIIG
	0912	2420	SGMR				1914.9	1917.5	2				IIIS
			HARV	1934	1935	2	1935	1937	3	1935	1937	3	IIIG
			HARV				2041		2	2041		2	IIIG
	2102	2400	CULG				2119.5	2211					IIIN,W
			CULG				2123.5	2149	2				II
			SGMR				2125.5	2138.2	1				II
			HARV				2126	2138	2	2130	2138		II
			CULG				2146.5	2147					IIIG
			CULG	2210.5	2400								IN,W
			CULG				2211	2230					IIIS,W
			CULG				2222	2400					IS
	2140	2400	MANI							2350.0	2351.1	1	III
			CULG	2351		1	2349.5	2352	2	2349.5	2351.5	1	IIIGG
			CULG				2352.5	2353					POSSIBLEII
29	0000	0700	CULG				0000	0220					IN,W
			CULG				0012.5	0014					IIIG,W
			CULG				0042.5						IIIB,W
			CULG	0107	0107.5								UNCLF
			CULG				0325.5	0343.5					IIIN,W
			CULG				0329.5	0331					IIIG
			CULG	0334	0334.5								IIIG
			CULG	0336	0336.5								IIIG,W
			CULG				0416						IIIB,W
	0407	1847	WEIS				0426.2	0427.0	2				IIIG
			CULG				0426	0427.5					IIIG
			WEIS				0429.1	0434.0	3				IIIG
	0000	0945	MANI							0430.2	0434.1	1	IIIG
			CULG	0430	0431	1	0429	0434.5	2	0430	0431	2	IIIGG,V
			CULG	0451.5	0452								RD
			CULG	0456.5	0457								FAST DRIFT
			WEIS	0456.6	0458.7	3	0456.6	0458.7	3				IIIG
			CULG	0457.5	0458.5	3	0457.5	0459	3	0457.5	0459	3	IIIGG,V

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JUN 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
29			MANI							0458.0	0458.8	1	III
			CULG				0459.5						IIIB
			CULG	0513	0658.5								IN
			CULG	0517	0518								IIIG
			WEIS				0536.8	0537.0	1				IIIB
			CULG				0537	0539.5					IIIG,W
			WEIS				0557.8	0558.2	1				IIIG
	0724	1818	DURN				0724 E	1040	1				I,DC
			WEIS	0810.3	0810.5	2							IIIG
			WEIS				0834.5	0836.1	2				IIIG
			WEIS				1045.3	1045.4	2				IIIG
	1053	1843	WEIS				1212.5	1212.7	2				IIIG
			DURN	1413.5	1416.2	3	1415.1	1416.2	3				IIIGG
	1215	2245	HARV	1413	1417	2	1415	1417	3	1415	1417	3	IIIGG,V A
			WEIS				1414.7	1418.0	3				IIIGG,V
			DURN				1415.3	1417.0	3				V
	0913	2420	SGMR				1416.0	1417.2	3				V
			DURN				1548.9	1549.1	2				IIIG
	2101	2400	CULG				2130.5						IIIB,W
	2151	2400	MANI										
			CULG				2210.5		2				IIIB
			CULG				2210.5	2212.5					IIIG
			CULG	2213.5	2214	2							IIIG
30	0000	0940	MANI										
	0000	0700	CULG				0211						IIIB,W
			CULG				0227.5	0228	2				IIIG
			CULG				0334	0457					IIIN,W
	0408	1549	WEIS				0645.9	0646.0	1				IIIB
			CULG				0646	0647					IIIG,W
			WEIS				0741.2	0741.4	1				IIIG
	0430	1821	DURN				0741.6	0741.7	3				IIIG
			DURN	0820.2	0820.6	1	0820.2	0820.6	3				IIIG
			WEIS				0941.7	0941.8	1				IIIB
			WEIS				1006.3	1006.7	3				IIIG
			DURN				1006.4	1006.7	3				IIIG
			WEIS	1051.8	1053.1	3	1051.8	1053.1	3				IIIG,U
			DURN	1052.1	1052.8	3	1052.1	1052.8	3				IIIGG,RS,U
	0913	2420	SGMR				1053.4	1053.6	2				III
	1607	1843	WEIS										
			DURN	1707.5	1710.7	2							IIIGG
	1215	2245	HARV	1710	1716	2							IIIGG
			DURN	1715.8	1716.4	2	1715.8	1716.4	3				IIIG
			SGMR				1944.6	1945.7	3				V
			HARV				1944	1945	3	1944	1945	3	IIIG,V
	2101	2400	CULG	2144.5	2145								IIIG
	2155	2400	MANI										
			CULG				2159	2200					IIIG,W
			CULG				2215.5						IIIB,W
			CULG				2232	2233					IIIG,W
			CULG	2244.5									IIIB
			CULG	2352	2354								IIIG

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

SELECTED SOLAR EVENTS

JUNE 1978

Culgoora

UT Date 197.8 JUNE	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
31/1	2300	0500	80)	.4)	20	L	1	I	Type I activity persisted from this region until 3rd.
			160)	0)					
	0135	0138	43.25)	1.2)			3)		
			.80)	1.0)	290	-	2)	IIIGG	*
			160)	.9)			1)		
2	0254	0304	43.25)	1.3)				IIIGG,II,	Complex source
			.80)	1.1)	295	-	3)	IIIGG	structure.
			160)	.9)					
2/3	2300	0500	80)	1.3)	230	R	1)	I	Type I activity persisted from this region until 5th.
			160)	1.2)			2)		
	2300	0500	160	.2	270	R	2	I	This region persisted until 4th.
3/4	2300	0500	43.25)	.8	155)		2)		Activity from this region persisted until 6th.
			80)	.8	190)	R	1)	III S,W	
			160)	.9	190)		1)		
	0302	0303	43.25)	1.2			)		
			80)	1.2	245	-	2)	III G,V	*
			160)	1.3			)		

Days without Heliograph observations: Nil

*Other type III's observed from same position during the day.

UT Date 197.8 JUNE	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
5/6	2303	2305	43.25	1.0	250		2)		
			80	1.0	240		1)	II	
			160)	.7)	220)		2)		
			)	1.0)	330)		)		
6/7	2330	0500	80)	1.0	245	unpol	1	I	Type I activity persisted from this region until 8th.
			160)						
	0440	0500	80)	1.0)	220	-	1	I	
			160)	.8)					
11	0214	0217	80	1.3	225	-	3	II	
12	0047		43.25)	1.2)	305	-	3)	III B	
			80)	1.1)			2)		
16	0346	0352	43.25)	1.0	250	-	3)	IIIGG	
			80)				2)		
			160)				2)		
17	0017	0018	43.25)	1.0	90		3)	IIIG,V,U	
			80)				1)		
	0150		160	.2	180	-	1	IIIB	

Days without Heliograph observations: Nil

* Other type III's observed from same position during the day.

SELECTED SOLAR EVENTS

JUNE 1978

Culgoora

UT Date 1978. JUNE	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
18	0210	0211	43.25)	1.6	115	-	2)	IIIG	
			80)	1.3			)		
	0405	0408	80)	1.3	115	-	2)	IIIG	
			160)				)		
	0416	0420	80	1.3	100	-	2	II	
21	0115	0116	80)	1.2	270	-	3)	IIIB	*
			160)				1)		
	0123	0130	43.25)				2)		
			80)	1.1	270	-	3)	II	
			160)				2)		
	0125		160	1.0	90	-	2	IIIB	
22/23	2300	0500	43.25)				2)		
			80)	.2	65	-	1)	IIIS	
			160)				1)		
23/24	2300	0500	80)	.4	130)	L)	2	IS	
			160)		180)	R)			

Days without Heliograph observations: ..Nil.....

* Other type III's observed from same position during the day.

UT Date 197Å JUNE	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
23/24	2300	0500	80)	.4	130)	L)	2	IS	
			160)		180)	R)			
24/25	2300	0500	43.25)	.2	350	unpol	3)	I	
			80)				3)		
			160)				2)		
	2300	0500	160	.8	145	L	2	I	Type I activity persisted from this region until 26th.
25/26	2300	0500	80)	.4	310	See Note	1	I	Complex polarisation and structure. Activity persisted until 29th.
			160)						
27	0059	0104	43.25)						
			80)	.3	315	-	3	IIIGG,V	*
			160)						
	0107	0120	43.25)						
			80)	.3	315	-	3	II	
			160)						

Days without Heliograph observations: ..Nil.....

* Other type III's obs erved from same position during the day.

SELECTED SOLAR EVENTS

JUNE 1978

Culgoora

UT Date 197.8 JUNE	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions		Polar-ization	Inten-sity (1-3)		
				Central Dist. ($R_\odot$)	Position Angle (Deg.)				
28	0245	0249	43.25)	.7)					
			80)	.3)	290	-	3	IIIGG,V	
			160)	.1)					
	0249	0306	43.25)	.7)					
			80)	.3)	290	-	3	II	
			160)	.1)					
	0400	0500	80)	.9	180	L	2	I	
			160)						
	2349	2352	43.25)	.6)					
			80)	.4)	40	-	3	IIIGG	*
			160)	.2)					
28/29	2300	0500	160	.2	40	L	2	I	
29	0457	0501	43.25)	.9	330)				
			80)	.4)	310)	-	3	IIIGG,V	*
			160)	.4)	310)				

Days without Heliograph observations: Nil

* Other type III's observed from same position during the day.

COSMIC RAY INDICES

(Neutron Monitors)

JUNE 1978

June 1978	THULE Average cts/hr	ALERT Average cts/hr	DEEP RIVER Average cts/hr	CALGARY Average cts/hr	SULPHUR MT Average cts/hr	KIEL Average cts/hr	CLIMAX Average cts/hr	TOKYO Average cts/hr	KULA Average cts/hr
1		7112	6703			6056.0		3548.8	
2		6993	6572			5956.1		3513.2	
3		6899	6481			5865.0		3485.9	
4		6922	6562			5907.1		3497.0	
5		6977	6585			5954.0		3518.6	
6		7042	6676			6008.7		3539.5	
7		7066	6684			6016.6		3557.0	
8		7124	6180			6092.9		3572.7	
9		7190	6816			6152.9		3581.4	
10		7243	6850			6177.3		3582.4	
11		7178	6752			6116.6		3566.9	
12		7216	6799			6149.0		3576.7	
13		7230	6829			6165.5		3575.2	
14		7249	6877			6196.0		3572.6	
15		7253	6887			6215.8		3575.4	
16		7239	6858			6198.9		3562.8	
17		7224	6805			6163.5		3565.7	
18		7235	6792			6155.4		3568.4	
19		7275	6837			6198.0		3572.0	
20		7274	6844			6196.5		3571.1	
21		7247	6826			6202.3		3568.8	
22		7256	6831			6201.3		3567.9	
23		7262	6845			6227.0		3562.5	
24		7283	6888			6251.4		3567.7	
25		7226	6784			6181.9		3551.9	
26		7014	6539(17)			5954.5		3535.1	
27		6955(2)	6555			5943.5		3525.1	
28		7146(4)	6099			6047.6		3558.0	
29		7128	5580			6059.0		3550.5	
30		7055	6652			6004.5		3531.7(23)	
MEAN		7150.4	6666.3			6100.5		3554.1	

Data not available at time of publication.

( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

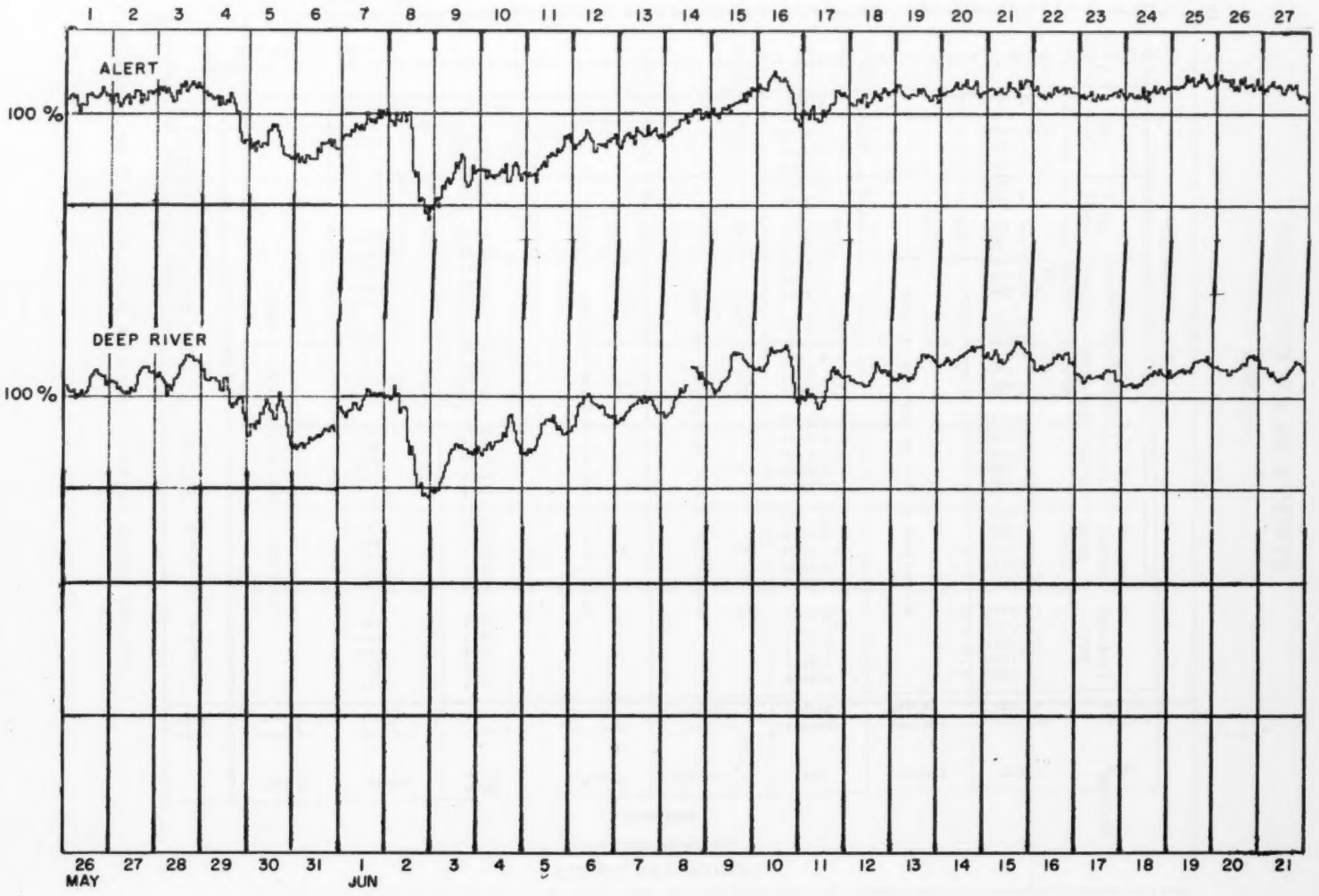
Notes: Thule, Alert, Calgary, Sulphur Mountain, Kiel, Climax and Kula Scaling Factors = 100. Deep River Scaling Factor = 300. Tokyo Scaling Factor = 256.

Kula data are available on magnetic tape from the World Data Center A for Solar-Terrestrial Physics. These data include the periods July 1967-December 1970 and October 1975 to the present.

Note about Alert and Deep River graphical plots: A programming oversight causes the monthly 100% reference level to change for May and June data. NGSDC will remedy this shortly.

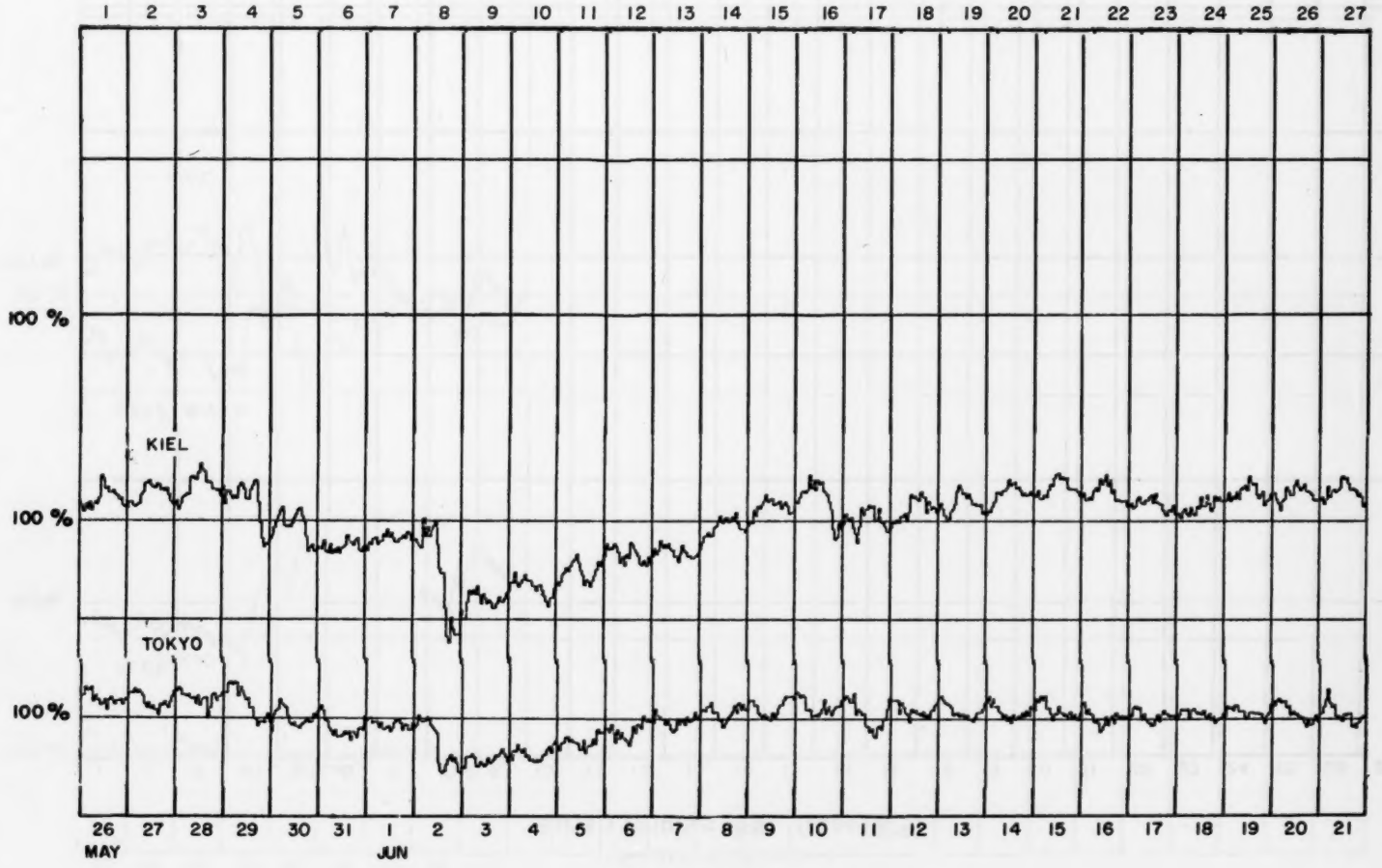
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1980 (May-June 1978)



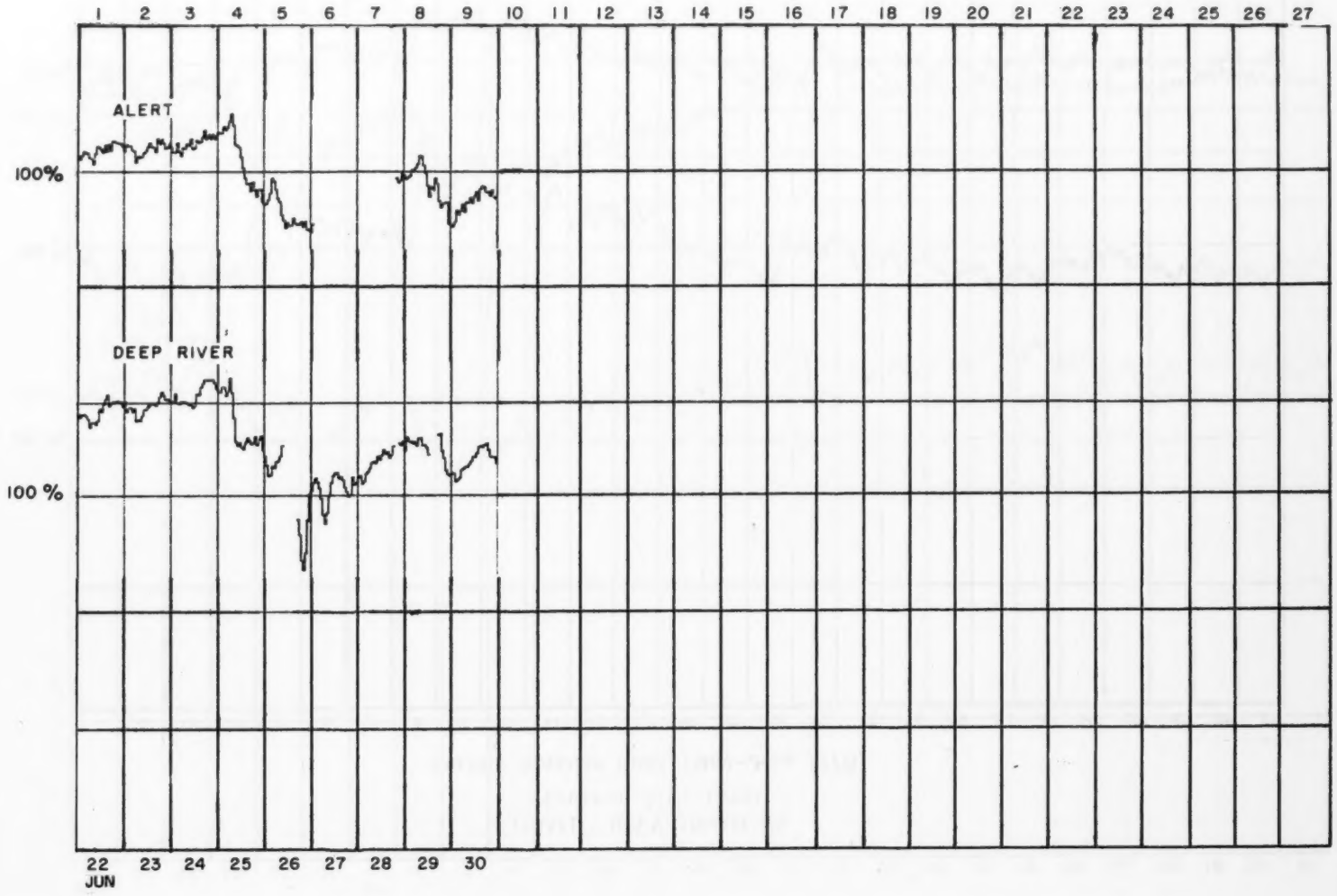
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1980 (May-June 1978)



COSMIC RAY INDICES
(Neutron Monitors)

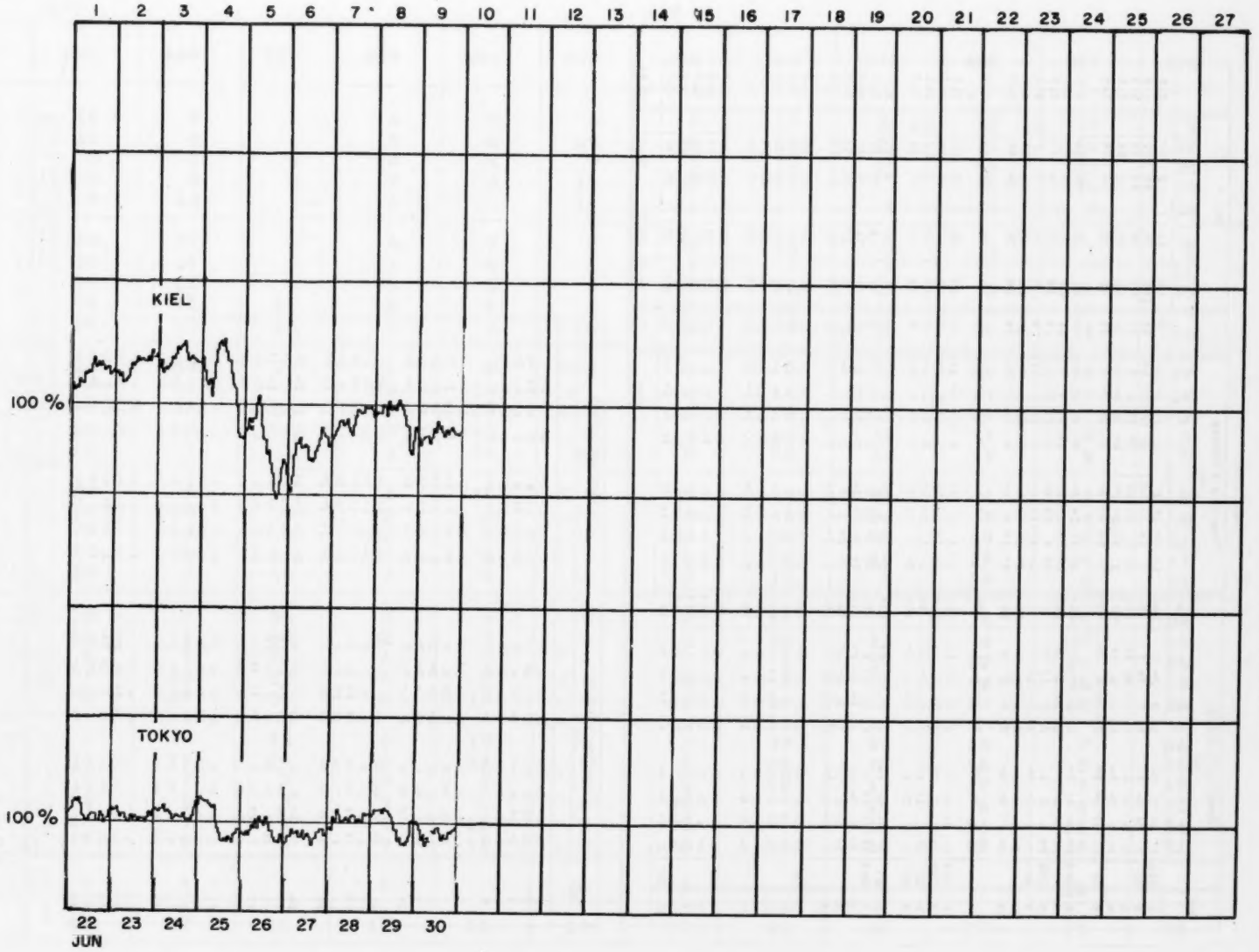
Bartels Rotation 1981 (June 1978)



COSMIC RAY INDICES
(Neutron Monitors)
Bartels Rotation 1981 (June 1978)

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1981 (June 1978)



GEOMAGNETIC ACTIVITY INDICES

JUNE 1978

Day		Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa		*		Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S	M		
1	Q7A	1	3-	2	2-	1-	2	2-	4	16-	1+	3-	2+	2	1-	2-	1+	4-	9	19	11	13	17	0.5
2	D1	2	2+	4-	7	7+	7	7+	5	42-	2	2+	4-	6+	6-	6-	6+	4+	82	102	76	59	120	1.8
3		6	5	4-	4	2+	3-	5-	2+	31-	6-	5	4-	3+	2+	2+	4	2	31	43	45	63	25	1.3
4		3	2	2-	3-	4+	3	4	6+	27	3	3-	2-	2+	4-	3-	4-	5-	26	40	31	18	53	1.2
5	D3	6+	6+	4+	3+	2+	3-	4	3+	33-	5	5+	4+	3+	3-	2+	3-	3	38	45	38	60	24	1.4
6	Q6A	2+	2-	1+	3+	2-	1	2-	3-	16-	2+	2-	2-	3-	2-	2-	2	3-	8	21	13	19	16	0.4
7		2+	3-	3-	2	2	2+	3	3+	20+	2+	3-	3	2	1+	2	3	3	11	25	21	21	25	0.6
8	Q9A	3+	4	2	1	2	2	1+	0+	16	4-	4	2+	1-	2-	2+	1+	1-	10	19	15	28	14	0.5
9	Q1	1-	2-	1+	0+	1	1-	1+	1	8	1-	2	1+	1-	1	1	1	1+	4	9	4	7	7	CK 0.1
10		2-	1	4-	4-	3	4	3	6	26	2-	1+	4	4-	3	3+	3	5-	24	38	31	24	45	1.2
10		2-	1	4-	4-	3	4	3	6	26	2-	1+	4	4-	3	3+	3	5-	24	38	31	24	45	1.2
11		4+	4	5-	3+	2	2-	1-	1	22-	4-	4	4+	4-	2+	1+	1	1+	17	34	31	51	14	0.9 0
12	Q8A	1-	2-	1-	3-	3	3	3+	1+	16+	1-	2	1	3-	3	3-	3-	1+	18	18	16	12	22	0.5
13	Q5A	1+	2-	1	3-	3-	2	1	1+	14-	1+	1+	1	2+	2	2-	1	1+	7	17	12	15	14	0.3
14	Q2	0+	1	1-	1-	1	1+	2-	2-	8+	1-	1	1-	1-	1	2-	2	1+	4	10	8	6	12	CC 0.1
15	Q4	2	2	2+	2	2	2-	1	1-	14-	2-	2	3-	3-	2	2-	1	1-	6	11	15	17	10	CC 0.3
16	Q3	1	2-	1-	2-	2	2-	2+	2+	13+	1-	1+	1	2-	2	1+	2	2	6	11	10	8	14	CC 0.3
17	Q8A	2+	3-	2+	3	2	2	2+	2	19-	2+	3-	2+	3-	2	2-	2+	2-	9	17	13	19	12	0.5
18		3-	2	3-	2+	3+	3-	3-	2+	21-	2+	2-	2+	3-	3-	3-	2+	2	11	21	16	16	22	0.7
19		3-	3-	3	3-	3	3	4-	4+	25	3-	2+	3	3	2+	3	3	4-	17	31	27	26	33	0.9
20		3	3-	2+	3-	2	2-	2+	3	20-	3	3-	2+	2+	2-	2-	2	3-	11	24	16	24	17	0.6
21	D4	3+	5+	4-	3+	5-	5	5	3+	34-	3+	4+	4-	3	3+	4	4-	3+	33	56	34	41	48	1.3
22		3+	3+	3-	3-	3+	3	3+	2+	24	3+	3	3-	3	3	2+	3	2+	15	29	23	25	27	0.8
23		3+	3-	3-	3+	3-	3+	4+	4-	26	3	2+	3-	3+	2+	3-	4-	4-	18	31	21	22	31	1.0
24		5-	4	4-	3-	3+	3-	3-	3-	26+	4	4-	3+	3-	3+	2+	2+	3-	19	35	25	33	28	1.0
25		3-	3-	4-	4	3-	4+	5	4	29	2	2+	3+	3+	2+	3+	4-	4-	24	43	23	27	40	1.2
26	D2	4	5+	6-	4+	5-	5	5	5	39	3+	5-	5	4-	3+	4-	4	4+	46	60	48	51	58	1.5
27		4-	4	3	2	3	2+	3+	2+	24-	4-	4-	3	2	3-	2-	3	2	15	27	21	26	23	0.9
28		2+	3-	2+	3-	3+	3+	2+	2+	21+	2	3-	2	3-	3-	3-	2-	2	12	21	15	16	21	0.7
29		1-	2-	2	3-	3-	4-	3+	8-	24+	1	2-	2+	3	3-	3	3	7-	32	55	28	15	68	1.3
30	D5	6	4-	5-	4-	4	3+	4+	1+	31	5-	4-	4+	3+	3+	3-	4-	1+	31	55	32	55	32	1.3
																		Mean	20	32.3	24.1	28.3		0.84

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	1+	3-	2+	2+	1	2+	2	4+	1-	2+	2+	2-	0+	1	1-	3
2	2+	3-	4	7-	6+	6	6+	5-	2-	2	4-	6	5	6-	6+	4-
3	6-	5+	4	4-	3-	3-	4	2	6-	5-	3+	3	2	2-	4	2-
4	3	2+	2-	2+	4	3	3+	5	3+	3-	1+	2+	4-	2+	4	4+
5	5+	6-	4-	3+	3-	3	3+	3	5	5	5-	4-	2	2-	2	3
6	2+	2-	2-	3	2	2-	2	2+	2	2-	2-	2+	1+	1+	2+	3-
7	2	3-	3-	2	2	2+	3	3	2+	3-	3	2+	1-	2-	3	2+
8	3+	4	2	1	2+	2+	1+	1-	4	4-	3-	1-	1+	3-	1	0+
9	1	2	2-	1	1+	1+	2-	2-	0+	2+	1+	0+	0+	0+	0	1-
10	2	1+	4+	4	3	4-	3	5	1+	1-	3	3+	3-	3+	3-	4+
11	4-	4	4+	4-	3-	2	1+	1+	4-	4	4+	4-	2-	1-	0+	1
12	1	2	1+	3	3	3	3	2	1-	2	1-	2+	3-	2	3-	1-
13	1+	1+	1+	3-	2+	2+	1+	2-	1+	1+	1-	2-	2-	1+	0+	1-
14	1	1	1	1+	1+	1+	2	2	0+	1	1-	0+	1-	2-	2	1-
15	2	2-	3-	3-	2+	2-	1+	1	1+	2+	3-	2+	1+	1+	1-	0+
16	1+	2-	1	2	2+	2-	2+	3-	0+	1+	1-	1+	1+	1-	2-	2-
17	3-	3-	3-	3-	2+	2+	3-	2+	2	2+	2+	2	1+	1	2	1+
18	2+	2	3-	3-	3	3	3-	2+	2	2-	2+	3-	2+	2-	2-	1+
19	3	2+	3	3	3-	3	3+	4-	2+	2+	3-	3	2	3	3-	4-
20	3-	3-	3-	3-	2	2	3-	3-	3+	3-	2	2-	1+	1+	1+	3-
21	3	5-	4-	3	4	4	4	3+	4-	4	4-	3	3-	4	4-	4-
22	3	3	3-	3+	3+	3-	3	2+	4-	3+	3-	3-	3-	2	3-	3-
23	3	2+	3	4-	3-	3-	4-	3+	3	2	2	3+	2-	3-	4-	4
24	4	4	3+	3-	3	3-	3-	3-	4	3+	3	3-	4-	2-	2+	3-
25	2+	2+	4-	4-	3	4-	4	4-	2	3-	3-	3-	2-	3	3+	3+
26	4	5-	5	4-	4-	4	4-	4	3-	5-	5	4-	3	3+	4	4+
27	4-	4	3+	2+	3-	2+	3	2+	4-	3+	3	2-	2+	1+	3+	1+
28	2+	3	2+	3	3	3	2+	2+	2	2+	2-	3-	2	2+	1	1+
29	1+	2-	3-	3+	3	3+	3+	7-	1-	1+	2	3-	2	2+	3-	6+
30	5-	4-	5-	4-	4-	3	4-	1+	5-	4-	4+	3+	3	2	3+	1+

Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2γ) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap ≤6 but one Kp ≥3o or two Kp values ≥3-"). An * means "not really disturbed" (Ap<20).

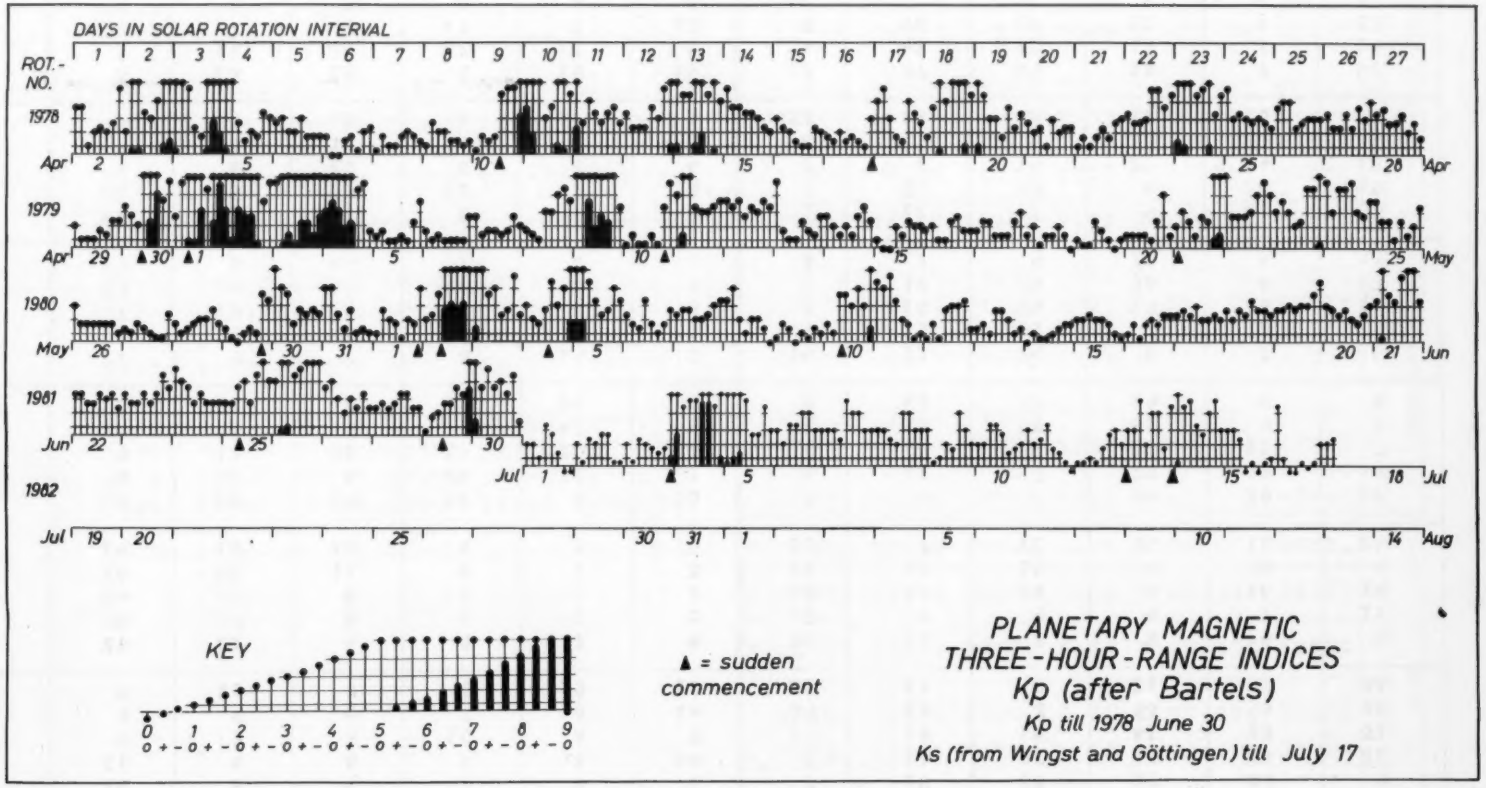
Geomagnetic three-hourly indices (Kn), (Ks) and (Km) as in IAGA-Bulletin No. 32 and indices (aa), "antipodal", as in IAGA-Bulletin No. 33 prepared by P. N. Mayaud of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 12 UT.

DAILY AVERAGE INDICES A

DAILY AVERAGE INDICES Ap

	1977						1978					
DAY	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
1	15	6	4	4	5	6	7	15	33	12	88	9
2	11	4	6	5	6	69	8	14	27	15	94	82
3	9	7	8	10	4	9	13	14	15	41	83	31
4	8	9	6	7	8	14	89	11	3	55	96	26
5	5	40	3	8	10	18	31	17	6	21	7	38
6	28	21	4	8	7	5	34	14	7	9	5	8
7	15	17	6	3	5	3	13	7	9	5	7	11
8	14	12	8	6	3	2	19	10	20	5	16	10
9	16	20	11	2	3	3	23	16	14	6	85	4
10	14	12	13	4	9	4	21	7	12	36	10	24
11	10	28	19	12	6	38	7	5	7	64	30	17
12	4	11	6	28	18	21	4	10	3	29	18	10
13	9	11	28	14	26	16	8	8	12	24	11	7
14	18	12	10	13	42	8	3	11	10	51	9	4
15	12	11	9	19	25	5	2	48	17	19	5	6
16	27	9	7	8	14	9	14	11	24	8	7	6
17	14	29	10	12	8	12	9	10	25	7	8	9
18	7	13	6	22	6	3	12	10	24	19	5	11
19	23	24	42	28	6	3	6	12	15	38	4	17
20	29	8	44	7	4	4	3	12	9	23	8	11
21	10	5	64	5	5	6	1	12	7	9	26	33
22	11	5	63	22	3	6	3	22	13	8	24	15
23	6	6	21	6	2	4	2	6	15	22	24	18
24	7	10	12	6	2	5	6	5	6	48	26	19
25	5	27	10	4	15	5	12	12	3	17	10	24
26	3	13	18	6	19	11	12	37	49	18	7	46
27	3	14	24	62	12	6	5	42	70	16	5	15
28	4	7	9	47	5	10	9	46	17	12	7	12
29	61	6	3	9	6	8	36		14	6	8	32
30	17	5	4	9	12	5	36		16	58	18	31
30	17	5	4	9	12	5	36		16	58	18	31
31	8	4		6		6	23		8		12	
MEAN	14	13	16	13	10	10	15	16	16	23	25	20

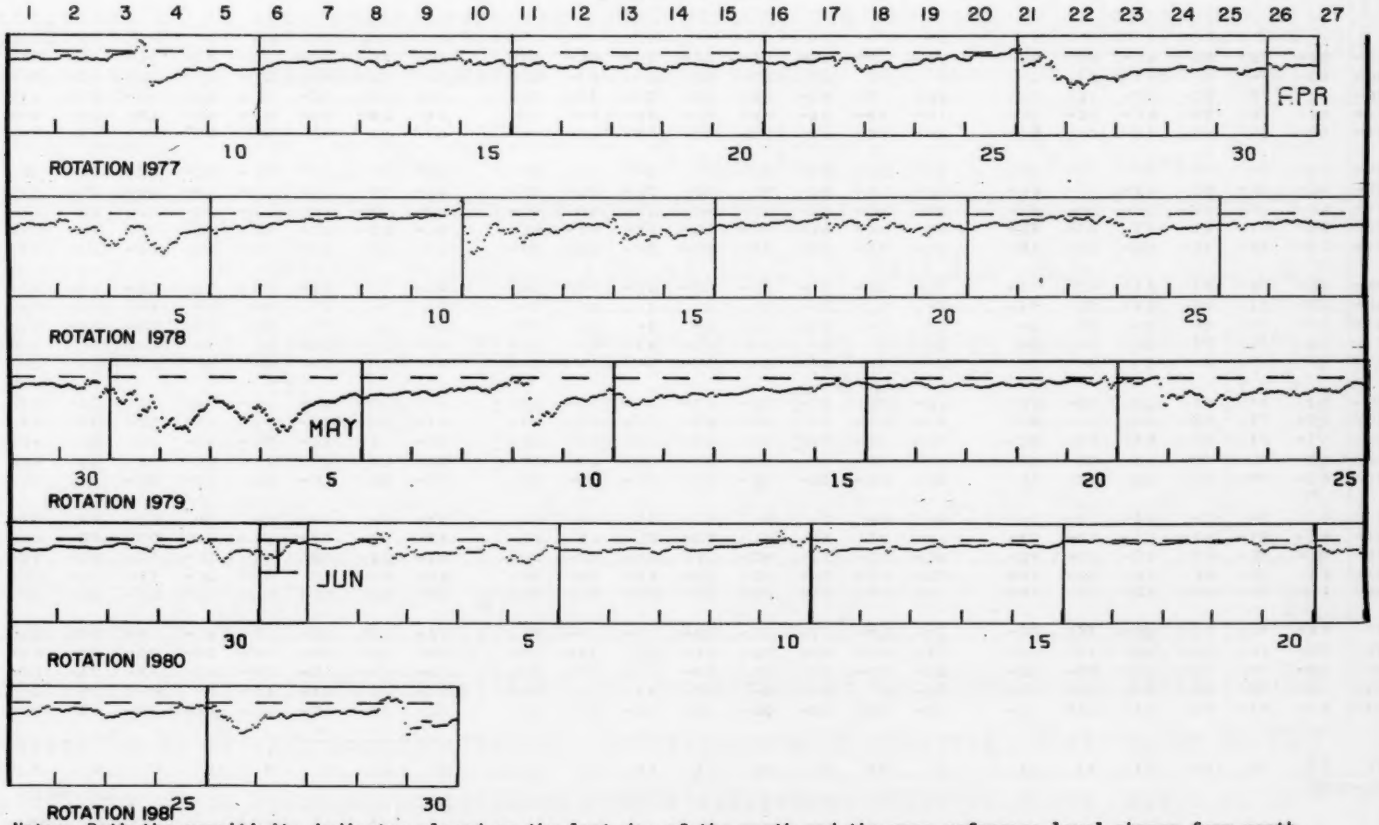
GEOMAGNETIC ACTIVITY INDICES



GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

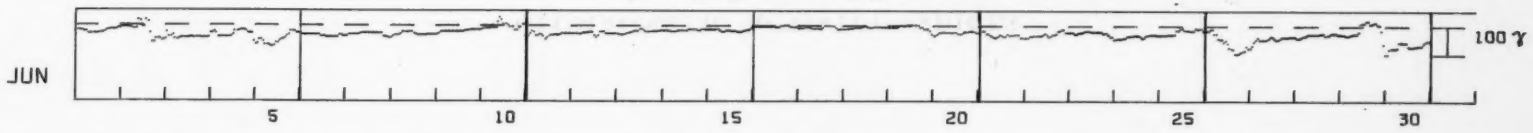
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

JUNE 1978

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-21	-19	-23	-23	-26	-25	-32	-32	-30	-29	-29	-27	-26	-25	-24	-21	-17	-15	-13	-15	-15	-15	-10	-13
2	-7	-7	-8	-9	-11	-13	-16	-14	-10	17	10	-10	-6	16	8	-31	-61	-57	-46	-44	-49	-34	-49	-46
3	-23	-42	-42	-33	-49	-51	-46	-42	-41	-45	-43	-43	-39	-44	-46	-40	-39	-40	-46	-41	-42	-45	-39	-27
4	-28	-21	-30	-41	-40	-40	-39	-40	-43	-41	-37	-32	-20	-24	-18	-15	-17	-21	-24	-30	-27	-32	-58	-67
5	-62	-49	-48	-58	-68	-69	-68	-74	-75	-67	-60	-62	-52	-47	-45	-41	-36	-31	-20	-20	-24	-29	-29	-28
6	-35	-34	-33	-35	-33	-31	-32	-32	-32	-34	-39	-40	-38	-43	-42	-41	-42	-41	-39	-38	-36	-33	-39	-37
7	-35	-30	-31	-30	-28	-34	-30	-26	-24	-25	-24	-25	-27	-30	-29	-29	-27	-25	-31	-39	-41	-43	-46	-40
8	-36	-32	-31	-31	-26	-22	-22	-24	-22	-20	-24	-31	-34	-37	-36	-34	-34	-32	-30	-32	-33	-34	-31	-30
9	-27	-22	-20	-20	-19	-21	-23	-22	-23	-23	-23	-22	-20	-19	-17	-15	-15	-15	-13	-14	-15	-16	-15	-12
10	-10	-6	-13	-8	-8	-7	-8	-11	12	27	15	0	6	-3	-9	-5	-7	-19	-18	-7	-5	3	1	-38
11	-35	-27	-19	-26	-35	-37	-30	-34	-39	-47	-40	-35	-31	-31	-30	-31	-32	-28	-25	-28	-29	-29	-28	-27
12	-29	-28	-30	-32	-27	-23	-23	-22	-21	-20	-26	-36	-41	-34	-21	-19	-24	-30	-29	-31	-31	-29	-31	-30
13	-34	-35	-31	-28	-25	-24	-21	-19	-17	-20	-17	-12	-11	-19	-24	-22	-20	-18	-18	-18	-19	-16	-15	-16
14	-18	-18	-21	-23	-24	-22	-19	-15	-15	-19	-17	-18	-15	-12	-12	-14	-14	-17	-20	-15	-12	-13	-14	-15
15	-14	-16	-17	-15	-14	-15	-21	-24	-24	-16	-17	-17	-22	-22	-22	-25	-25	-22	-17	-15	-14	-13	-10	-7
16	-2	-3	-3	-5	-8	-5	-2	-4	-5	-4	-6	-10	-9	-5	0	0	1	2	-2	-8	-10	-7	-10	-13
17	-11	-9	-8	-6	-5	-10	-13	-14	-11	-9	-14	-16	-8	-1	0	-2	-6	-6	-7	-12	-15	-12	-13	-13
18	-14	-10	-10	-9	-8	-6	-8	-9	-10	-4	-1	-5	-10	-12	-6	-4	-5	-6	-6	-4	-10	-10	-11	-9
19	-8	-10	-8	-9	-4	1	-4	-5	-1	3	1	4	-2	-3	0	-2	-10	-10	-15	-14	-15	-21	-31	-37
20	-38	-29	-23	-21	-25	-24	-24	-26	-27	-24	-22	-23	-31	-32	-27	-21	-20	-19	-17	-18	-24	-25	-28	-21
21	-19	-16	-22	-30	-32	-37	-39	-43	-42	-36	-30	-37	-40	-35	-28	-36	-31	-33	-29	-31	-34	-43	-45	-43
22	-42	-43	-36	-34	-35	-33	-33	-36	-36	-29	-25	-34	-39	-34	-29	-30	-26	-18	-15	-12	-13	-25	-26	-24
23	-22	-23	-31	-32	-23	-22	-23	-18	-16	-20	-22	-24	-20	-21	-24	-24	-22	-29	-27	-28	-34	-39	-41	-48
24	-45	-42	-48	-43	-40	-41	-36	-34	-34	-33	-31	-34	-34	-39	-45	-38	-33	-31	-29	-29	-30	-34	-36	-33
25	-35	-32	-30	-30	-29	-29	-28	-28	-15	-14	-9	-6	-16	-19	-19	-21	-20	-15	-8	-14	-9	-13	-20	-19
26	-16	-17	-11	-14	-30	-31	-45	-49	-44	-57	-49	-61	-76	-80	-83	-96	-98	-90	-87	-84	-82	-69	-78	-74
27	-56	-53	-47	-39	-49	-48	-47	-47	-44	-40	-35	-39	-45	-50	-45	-41	-37	-39	-39	-42	-36	-35	-37	-38
28	-44	-42	-39	-35	-34	-31	-27	-29	-30	-31	-28	-28	-25	-24	-26	-35	-33	-31	-25	-23	-23	-27	-32	-29
29	-30	-33	-36	-32	-31	-28	-25	-28	-26	-19	8	11	11	17	13	5	7	12	9	1	-2	-19	-64	-98
30	-98	-77	-74	-77	-78	-72	-54	-57	-60	-56	-60	-71	-74	-70	-67	-66	-65	-68	-66	-59	-52	-49	-49	-47



NOTE: Hourly values of the provisional equatorial Dst index for June 1978 are based on data from Hermanus, Kakioka, and San Juan. The magnetometer at Honolulu was not operating during May and June 1978.

PRINCIPAL MAGNETIC STORMS

JUNE 1978

OBS. 2 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	COMMENCEMENT hr min (UT)	TYPE	SC - AMPLITUDES D(')	SC - AMPLITUDES H(γ)	SC - AMPLITUDES Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	RANGES H(γ)	RANGES Z(γ)	UT END DAY	UT END HOUR
COL	64.6N	1	2143	SC*	+17	-56	+14	02(4,7)	7	248	1790	990	03	12
SIT	60.1N	1	2143	SC*	+ 7.4*	-13.7*	- 5.9*	02(4)	8	--	--	860	03	11
NEW	55.1N	1	2143	SC*	2	31	--	02(4,7)	-	--	--	--		
WIT	54.2N	1	2143	SC*	- 1 *	+53 *		02(5,6)	7	38	425	135	03	21
FRD	49.6N	1	2143	SC*	- 1	+37	- 5	2(4,5,7,8) 3(1,2) 5(1)	6	43	258	122	06	03
SJG	29.9N	1	2142	SC	--	+15	+ 3		-	--	--	--		
GUL	24.5N	1	2143	SC	- .2	20	- 2	--	-	14	247	59	04	03
JAI	17.3N	1	2143	SC	- .6	19	- 5	--	-	13	237	60	04	03
SHL	14.6N	1	2143	SC	- .2	15	3	--	-	10	220	43	04	03
UJJ	13.5N	1	2143	SC	- .2	22	- 5	--	-	11	267	63	04	03
A IG	09.5N	1	2143	SC	- .3	17	- 3	02(4)	7	10	242	70	04	03
HYB	07.6N	1	2142	SC	- .2	+17	- 2	--	-	--	--	--		
GUA	04.0N	1	2143	SC*	--	--	--		-	--	--	--		
ANN	01.4N	1	2143	SC	- .6	17	9	--	-	10	284	103	04	03
HUA	00.6S	1	2143	SC*	--	32	4	02(6,7)	7	16	510	44	04	04
TRD	01.2S	1	2143	SC	.2	14	20	--	-	6	336	174	04	03
HER	33.7S	1	2143	SC	+ 2	+14	+12	02(4) 03(1)	6	18	161	135	04	03
KGL	56.5S	1	2143	SC*	--	--	--	02(7)	9	--	--	--	03	18
NEW	55.1N	2	0913	SC	9	110	13	03(1)	7	78	385	458	04	11
IRK	41.0N	2	0724	SC	.9	12	2	02(4)	7	25	314	77	05	21
SJG	29.9N	2	0913	SC	+ 1	+45	+14	02(6)	6	14	122	57	04	03
HYB	07.6N	2	0913	SC	- 1.9	+ 8	- 5	02(4,6)	7	9	256	30	04	03
GUA	04.0N	2	0914	SC	--	66	-17	02(4)	7	10	170	50	04	04
PHG	18.7S	2	0915	SC		+60	+49	02(4)	7	4	200	110	03	12
GNA	43.3S	2	0914	SC	+ 5.4	+41	+25	02(7) 03(1)	6	26	140	150	03	12
TOO	46.7S	2	0915	SC	- 4.6	+49	+11	02(4,6)	6	27	160	80	03	12
COL	64.6N	4	23--	..	..	..	..	05(2,3)	6	148	880	760	05	13
SIT	60.1N	4	1212	SC*	- 7.7*	+21.9	+ 2.2	05(2)	7	--	730	370	05	11
NEW	55.1N	4	1211	SC*	5	18	6	05(2)	7	72	182	232	06	04
WIT	54.2N	4	1211	SC*	- 2 *	+58 *		04(8) 05(1,2)	6	25	180	65	05	24
GUL	24.5N	4	1211	SC	- .4	32	- 4	--	-	8	102	31	06	02
JAI	17.3N	4	1211	SC	- 1.1	26	- 6	--	-	7	87	25	06	02
SHL	14.6N	4	1211	SC	- .2	26	4	--	-	7	83	47	06	02
UJJ	13.5N	4	1211	SC	- .7	32	- 7	--	-	6	91	36	06	02
A EG	09.5N	4	1211	SC	- .9	23	- 8	05(2)	5	5	74	43	06	02
HYB	07.6N	4	1212	SC	- .6	+26	- 2	05(2)	5	5	77	31	06	02
GUA	04.0N	4	1212	SC	--	--	--		-	--	--	--		
ANN	01.4N	4	1211	SC	- 1.4	30	16	--	-	5	81	64	06	02
HUA	00.6S	4	1211	SC*	3	44	4	04(5)	5	7	253	24	05	24
TRD	01.2S	4	1211	SC	- .3	26	31	--	-	4	113	61	06	02
PHG	18.7S	4	1211	SC	+ .2	+20	+17	04(8)	5	4	100	30	05	13
HER	33.7S	4	1212	SC	- 1	+11	+ 5	04(8) 05(1,2)	5	13	59	100	05	12
KGL	56.5S	4	1211	SC*	--	--	--	05(1)	6	--	--	--	05	11
COL	64.6N	10	0842	SC*	- 8	+150	-22	11(4)	6	69	920	340	11	12
SIT	60.1N	10	0830	SC	- 5.1	+74.7	+ 8.9	11(3)	5	30	160	320	11	12
NEW	55.1N	10	0827	SC	5	84	--	10(3,8) 11(2,4)	5	28	164	97	11	15
FRD	49.6N	10	0827	SC	+ 1	+71	-11	10(8)	6	18	128	60	12	00
IRK	41.0N	10	0827	SC	- 1.0	54	10	10(3,4,8) 11(3)	5	20	176	36	11	15
SJG	29.9N	10	0913	SC	+ 1	+36	+11	10(8)	6	8	85	27	11	11
GUL	24.5N	10	0827	SC	- 1.4	48	- 3	--	-	12	113	48	11	11
JAI	17.3N	10	0827	SC	- 1.8	46	-11	--	-	10	123	37	11	11
SHL	14.6N	10	0827	SC	- .8	41	8	--	-	8	121	38	11	11
UJJ	13.5N	10	0827	SC	- 1.3	58	-14	--	-	8	134	39	11	11
ABG	09.5N	10	0827	SC	- 1.5	45	-13	10(3,4,8)	5	7	118	40	11	11
HYB	07.6N	10	0828	SC	- 1.1	+47	- 3	10(3,4,8)	5	4	126	27	11	16
GUA	04.0N	10	0828	SC	--	39	- 9	11(3)	5	10	130	20	11	12
ANN	01.4N	10	0827	SC	- 2.6	68	30	--	-	6	138	77	11	11
HUA	00.6S	10	0827	SC	2	55	11	10(8)	5	7	242	48	11	12
TRD	01.2S	10	0827	SC	- .2	58	64	--	-	4	157	117	11	11
PHG	18.7S	10	0827	SC	- .7	+39	+33	10(3,4,8)	5	3	130	60	11	12
HER	33.7S	10	0830	SC	+ 4	+29	+24	10(3,8)	5	22	94	77	11	16
TOO	46.7S	10	0830	SC	- 2.7	+34	+11	10(4,8) 11(2,3,4)	4	8	120	30	11	15
KGL	56.5S	10	2118	SC	--	--	--	10(8) 11(3,4)	4	--	--	--	11	11
NEW	55.1N	20	18--	..	..	..	..	21(2)	6	35	195	194	29	04
KGL	56.5S	20	21--	..	..	..	..	21(1,2,6,7,8) 22(1,7)	4	--	--	--	23	03
FRD	49.6N	21	03--	..	..	..	..	21(2) 24(1,2)	5	24	133	61	24	06
HUA	00.6S	21	0028	..	--	--	--	21(6,7)	5	7	218	25	22	05
WIT	54.2N	25	0825	SC*	+ 5 *	-15 *		25(7)	6	24	200	85	26	23
FRD	49.6N	25	0825	SC*	- 5	+23	- 3	26(3)	6	23	159	117	28	06
IRK	41.0N	25	0400	..	..	..	..	25(3,4) 26(2,3)	5	29	142	57	27	21
GUL	24.5N	25	0700	..	..	..	..	--	-	11	106	69	27	01
JAI	17.3N	25	0700	..	..	..	..	--	-	10	114	63	27	01
SHL	14.6N	25	0700	..	..	..	..	--	-	10	127	36	27	01
UJJ	13.5N	25	0700	..	..	..	..	--	-	9	135	64	27	01
ABG	09.5N	25	0700	..	..	..	..	26(1,2,3)	5	7	146	77	27	01
HYB	07.6N	25	0825	SC	- .5	+19	- 2	26(2,3)	5	8	161	52	26	23
GUA	04.0N	25	2301	..	..	..	..	26(2)	5	10	170	50	27	08
HUA	00.6S	25	0824	SC	--	18	6	26(5,6)	5	5	223	46	26	23
TRD	01.2S	25	0700	..	..	..	..	--	-	5	245	125	27	01
PHG	18.7S	25	21--	..	..	..	..	26(2)	6	5	180	60	27	00
HER	33.7S	25	2200	..	..	..	..	26(2,7)	5	29	108	74	27	09

NOTE: Hourly values of the provisional equatorial Dst index for June 1978 are based on data from Hermanus, Kakioka, and San Juan. The magnetometer at Honolulu was not operating during May and June 1978.

PRINCIPAL MAGNETIC STORMS

JUNE 1978

OBS. 2 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
COL	64.6N	26	04--	..	..	..	..	26(6,7)	6	245	1410	820	26	20
SIT	60.1N	26	00--	..	..	..	..	26(3)	7	50	640	420	27	07
KGL	56.5S	26	0437	SC*	--	--	--	26(2,7,8)	5	--	--	--	26	23
COL	64.6N	29	20--	..	..	..	..	29(8) 30(3,4)	5	132	920	490	30	20
SIT	60.1N	29	0951	SC	- 1.2	+32.2	+ 1.5	30(5)	7	50	490	500	30	19
NEW	55.1N	29	0951	SC	1	35	--	29(8)	7	35	244	226	01	05
WIT	54.2N	29	0951	SC	+ 1	+ 8		29(8)	7	50	260	125	30	20
FRD	49.6N	29	0951	SC	- 1	+26	- 6	29(8)	7	18	304	134	01	04
IRK	41.0N	29	2100	SC*	.6	26	8	29(8)	5	21	160	80	30	21
SJG	29.9N	29	0951	SC	--	+16	+ 4	29(8)	7	10	192	44	30	13
GUL	24.5N	29	0951	SC	- 1.1	23	- 2	--	-	10	133	40	30	19
JAI	17.3N	29	0951	SC	- 1.0	28	- 4	--	-	9	125	41	30	19
SHL	14.6N	29	0951	SC	- .4	..	4	--	-	6	143	33	30	19
UJJ	13.5N	29	0951	SC	- .7	25	- 5	--	-	7	141	46	30	19
ABG	09.5N	29	0951	SC	- .7	18	- 7	29(8)	6	7	129	53	30	19
HYB	07.6N	29	0951	SC	- .6	+21	- 1	29(8)	6	6	130	26	30	20
GUA	04.0N	29	0951	SC	--	18	- 3	29(8)	7	10	130	40	30	15
HUA	00.6S	29	0950	SC	1	23	5	29(8)	7	7	312	32	30	21
TRD	01.2S	29	0951	SC	- .3	26	30	--	-	3	192	125	30	19
PHG	18.7S	29	0951	SC		+18	+14	29(8)	6	5	130	50	30	15
HER	33.7S	29	0951	SC	+ 1	+ 6	+ 4	29(8)	6	26	107	115	30	15
TOO	46.7S	29	21--	..	..	..	..	29(8)	5	22	100	50	30	16
KGL	56.5S	29	0951	SC*	--	--	--	29(8)	8	--	--	--	30	16

Reports were received from the following observatories:

Alibag Annamalainagar College Fredericksburg Gnangara Guam Gulmarg Hermanus Huancayo
Hyderabad Irkutsk Jaipur Kerguelen Newport Port Moresby San Juan Shillong Sitka Toolangi Trivandrum
Ujjain Witteveen

Please note: The Boulder Geomagnetic Observatory converted to digital format in March 1978. Since that time, data which were reduced from the anolog recordings are no longer available, e.g., Principal magnetic storms and K indices.

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

JUNE 1978

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS (by Dr. A. Romaná).

The meaning of the station symbols is given in the IAGA-News No. 16.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc).

01	2143	A: ESK DOU VIC FUR OTT EBR COI FRD HUA LMN PAF B: WNG WIT VAL HAD AQU TOL KAK CZT DRV C: NGK MMB KNY (bs: B: KSA)
02	0913	A: MMB TOL KAK KSA KNY HUA B: WNG WIT VAL EBR (si: A: FUR)
04	1211	A: SOD ESK WNG WIT DOU VIC FUR OTT EBR COI TOL HUA LMN PAF B: NGK VAL HAD AQU KAK SZT CZT C: MMB (si: A: KNY)
10	0828	A: SOD VIC FUR OTT EBR COI FRD KSA SZT HUA LMN B: ESK WNG WIT VAL DOU AQU TOL KAK KNY PAF DRV C: NGK HAD CZT
10	2116	B: VAL KAK SZT PAF C: WNG MMB KNY CZT (si: A: WIT FUR; B: TOL)
25	0825	A: SOD OTT FRD HUA B: ESK WIT KAK DRV C: MMB CZT (bs: A: LMN; si: A: FUR)
29	0951	A: VIC OTT COI TOL FRD HUA LMN B: SOD WNG VAL FUR MMB KAK PAF C: WIT HAD AQU EBR KNY CZT DRV

Solar-flare effects (sfe).

Effects confirmed by ionospheric or solar observations are underlined.

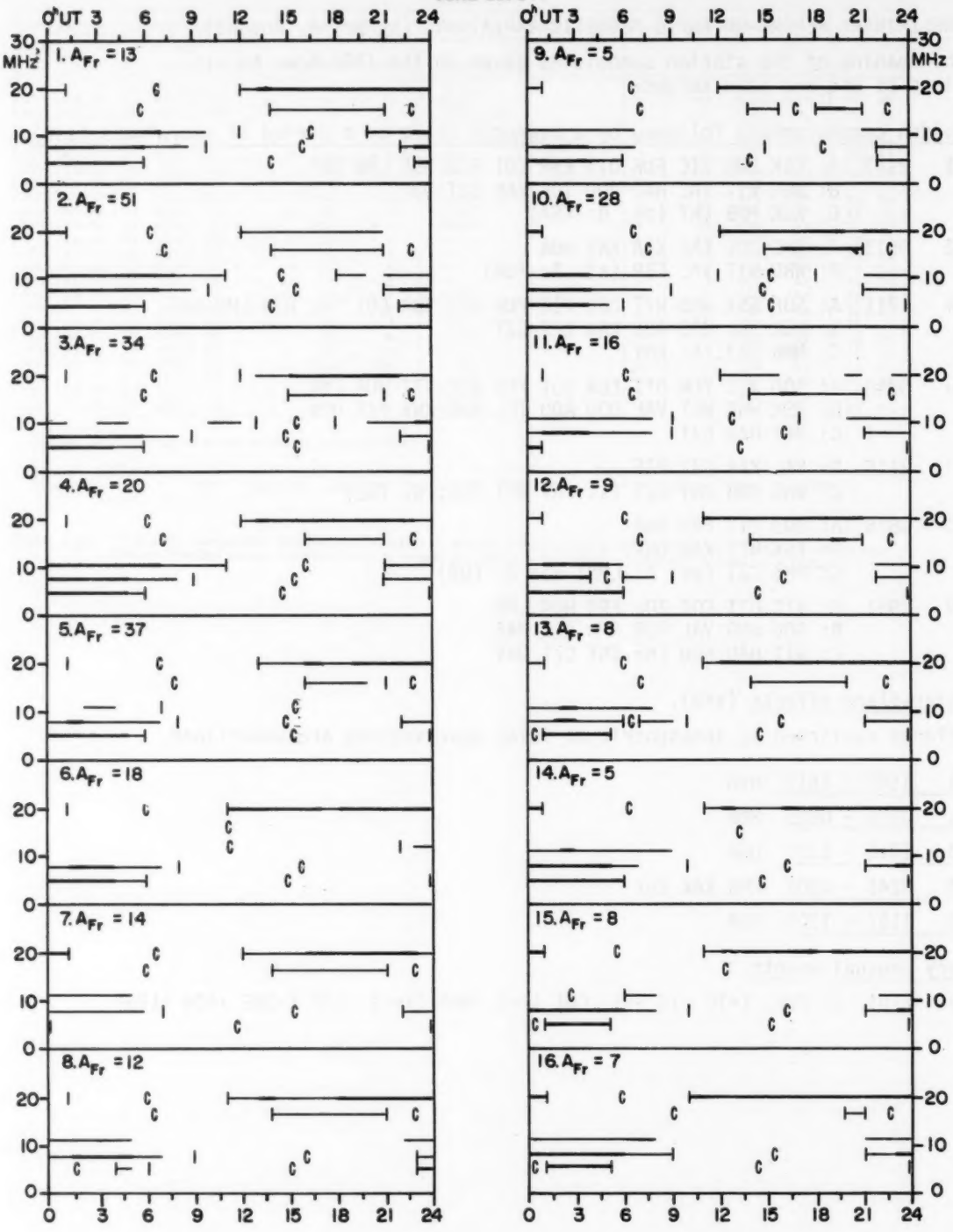
01	1545 - 1610	HUA
11	0204 - 0225	MMB
23	1316 - 1327	HUA
28	0245 - 0302	MMB KAK KNY
28	1157 - 1206	HUA

Very unusual events.

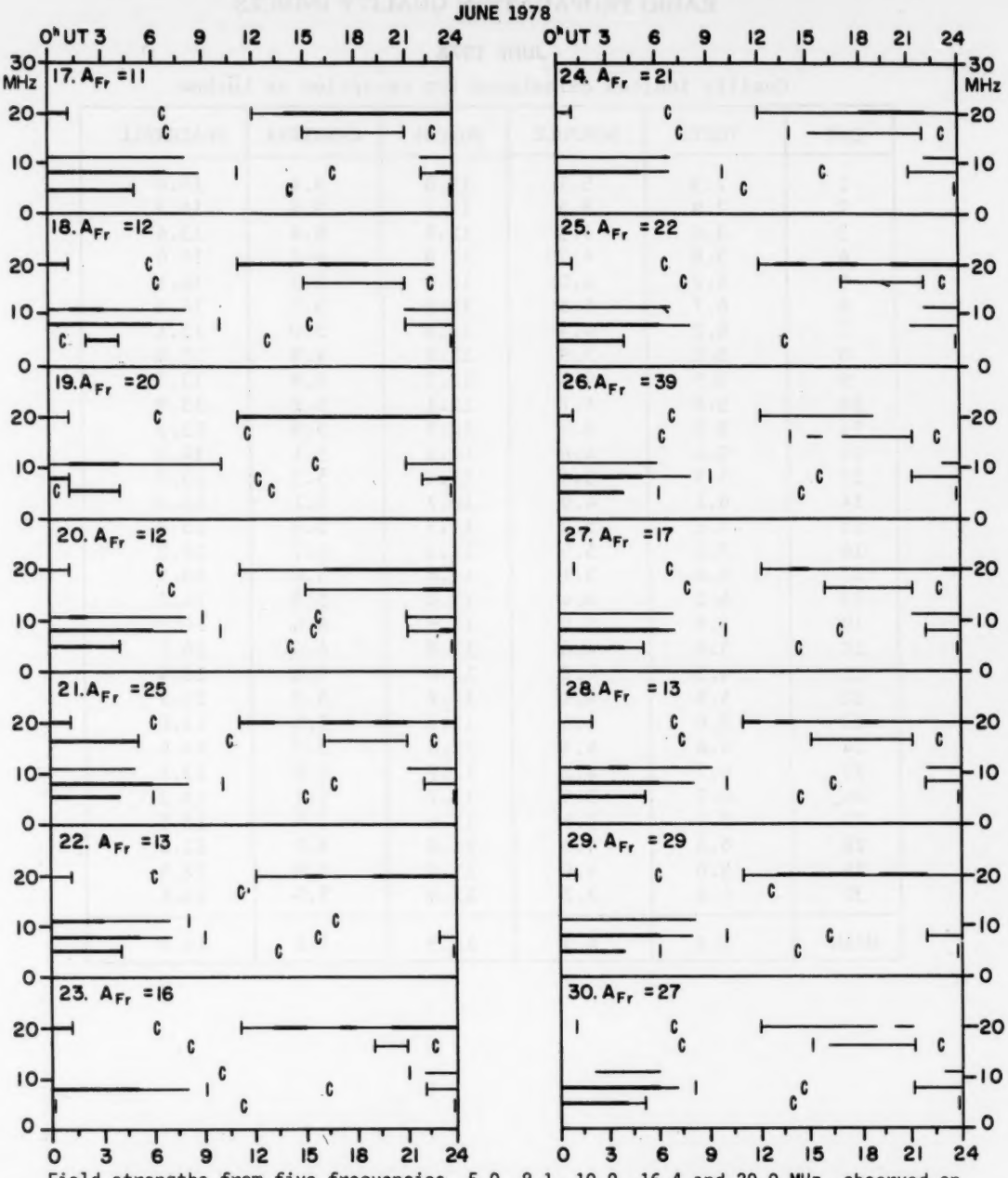
29 2101 si FUR (+70 -15 -8) COI (++) HUA (+++) PAF (-582 -409 +195)

TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JUNE 1978



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH



Field strengths from five frequencies, 5.0, 8.1, 10.9, 16.4 and 20.0 MHz, observed on a Lüchow - Norfolk circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

JUNE 1978

Quality indices calculated for reception at Lüchow

DAY	TOKYO	NORFOLK	MOSCOW	CANBERRA	BRACKNELL
1	7.3	5.1	12.8	5.4	15.0
2	2.9	3.5	12.1	5.4	14.3
3	3.4	4.5	12.1	6.4	13.6
4	3.8	4.7	11.8	4.7	14.0
5	4.2	4.0	12.0	4.9	14.1
6	6.7	5.5	11.9	5.1	14.0
7	6.2	4.4	11.9	5.0	15.1
8	5.2	3.9	11.9	4.9	13.8
9	5.9	4.4	12.3	4.9	13.5
10	5.8	4.7	12.1	5.2	13.9
11	5.2	3.9	12.1	5.9	13.2
12	5.4	4.8	12.1	5.1	14.2
13	5.9	5.4	11.4	5.3	13.2
14	6.1	4.9	10.7	5.1	13.2
15	7.1	5.3	11.7	5.4	13.3
16	7.2	5.9	12.3	4.7	15.2
17	6.8	5.1	11.8	5.4	13.9
18	6.2	4.4	12.0	5.3	14.2
19	5.6	5.5	11.9	4.6	14.1
20	5.6	4.6	11.8	4.4	14.1
21	4.3	4.2	12.0	4.8	13.4
22	5.5	4.1	12.2	5.2	13.9
23	5.6	4.6	11.6	5.0	14.0
24	4.4	4.3	12.3	5.7	13.6
25	4.7	4.2	11.7	6.0	13.5
26	2.7	3.5	11.7	5.1	13.3
27	5.1	3.9	11.6	5.4	13.5
28	6.3	4.3	11.6	5.1	12.6
29	5.0	4.6	11.5	4.0	12.9
30	4.4	3.2	11.4	5.0	12.1
MEAN	5.3	4.5	11.9	5.1	13.8

USCOMM-NOAA-ASHEVILLE,N.C. 9/78 950

AUGU
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Data
Explan

AUGUST 1978 Number 408 - Part

NOAA STACKS

SEP 1978

Solar-Geophysical Data
comprehensive reports

Data for February 1978 -- January 1978 & Miscellanea
Explanation of Data Reports Issued as Number 402 (Supplement) February 1978

CORRECTED DATA PAGE 80

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE / BOULDER, COLORADO

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Solar - Geophysical Data

NO. 408 AUGUST 1978

Part II (Comprehensive Reports)

DATA FOR
FEBRUARY 1978
JANUARY 1978
& MISCELLANEA

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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To standardize referencing these reports in the open literature, the following format is recommended:

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SOLAR-GEOPHYSICAL DATA

No. 408

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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"398A 36" listed under 1977 Aug means that data for August 1977 were contained in *Solar-Geophysical Data* Number 398 - Part I, beginning on page 36.

A = Part I, B = Part II.

----- = no data available.
Blank = data not yet received.

FEBRUARY 1978 DATA

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ACTIVE REGIONS

CARRINGTON ROTATION 1664

(January 17 to February 14, 1978)

Region No.	Coordinates		Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1663	Activity at West Limb
	Lat.	Long.					
1	15°N	356°	>6	1	x		decreasing
2	25 S	356	>6	2	x		
3	23 S	354	-2	4			increasing
4	27 N	317	>6	1	x	(2)	dispersed
5	27 N	297	+1	1	x		
6	19 N	256	>6	1	x		dispersed
7	18 N	254	+3	4			decreasing
8	27 N	247	>6	1	x		dispersed
9	22 N	234	>6	2		(4)	decreasing
10	40 N	220	+1	1	x		dispersed
11	17 S	209	>6	2			decreasing
12	17 S	168	+4	2			
13	33 S	161	>6	3		(11)	decreasing
14	16 N	160	>6	2			decreasing
15	27 S	159	>6	3			decreasing
16	33 N	153	-1	1	x		decreasing
17	21 N	145	>6	3			decreasing
18	28 S	143	>6	1	x	(18)	decreasing
19	12 N	139	>6	1	x		disappeared
20	26 N	108	+4	2			decreasing
21	28 S	83	>6	3			decreasing
22	19 N	80	>6	3			decreasing
23	25 N	73	>6	4			decreasing
24	17 N	69	>6	4		(24)	decreasing
25	25 N	61	>6	1	x		dispersed
26	28 S	31	0	2			decreasing
27	15 N	30	>6	7			stable

ACTIVE REGIONS

CARRINGTON ROTATION 1665

(February 14 to March 13, 1978)

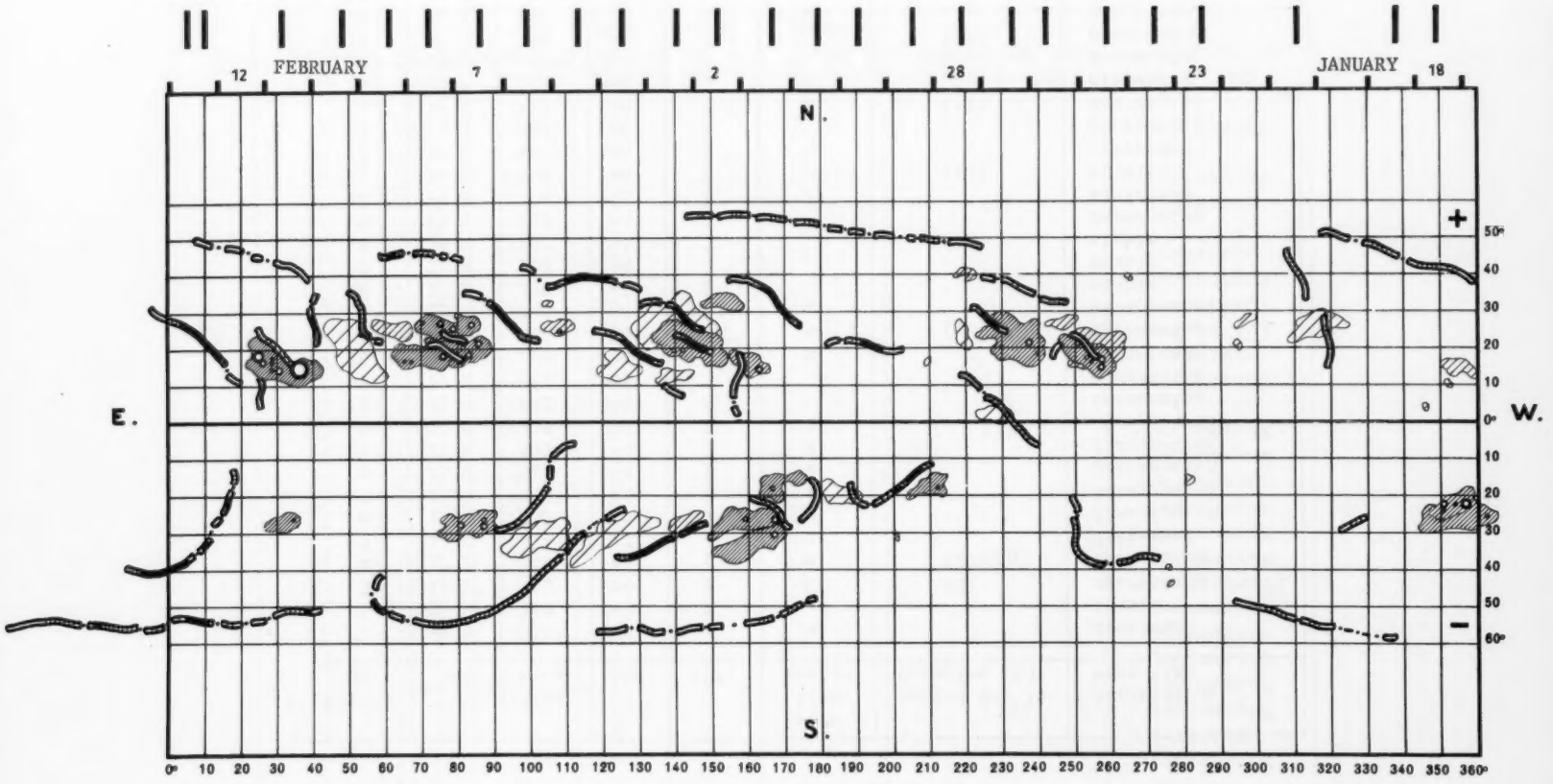
Region No.	Coordinates Lat.	Coordinates Long.	Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1654	Activity at West Limb
1	29°S	359°	+4	1	x		dispersed
2	25 N	358	-2	2			stable
3	24 S	352	>6	2		(3)	decreasing
4	26 S	349	>6	1	x	(2)	decreasing
5	23 S	334	-2	1	x		dispersed
6	31 S	332	>6	1	x		disappeared
7	21 S	330	>6	1	x		disappeared
8	26 N	314	-3	1	x		disappeared
9	22 N	301	>6	1	x		disappeared
10	17 N	300	+1	1	x		disappeared
11	31 N	282	>6	4			decreasing
12	19 N	261	>6	2			decreasing
13	24 N	261	>6	1	x		dispersed
14	21 N	250	>6	1	x	(6)	decreasing
15	22 S	240	>6	1	x		disappeared
16	20 N	229	-1	4			stable
17	23 N	220	>6	2			stable
18	39 N	191	>6	3			stable
19	18 S	185	>6	3			decreasing
20	19 N	178	>6	1	x		dispersed
21	17 S	168	>6	1	x	(12)	stable
22	17 N	167	>6	1	x		dispersed
23	23 S	158	>6	2			decreasing
24	29 S	155	>6	1	x	(15)	decreasing
25	29 N	145	>6	1	x		dispersed
26	23 S	139	>6	2			decreasing
27	24 N	140	>6	2		(17)	decreasing
28	40 S	136	>6	1	x		dispersed
29	23 S	94	+2	1	x		dispersed
30	15 N	79	>6	2			decreasing
31	22 N	78	>6	4		(22)	decreasing
32	38 S	78	>6	1	x		disappeared
33	28 N	64	>6	1	x	(28+25)	dispersed
34	29 N	61	>6	2			decreasing
35	18 N	34	>6	4		(27)	decreasing

SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1664

JANUARY 17 TO FEBRUARY 14, 1978

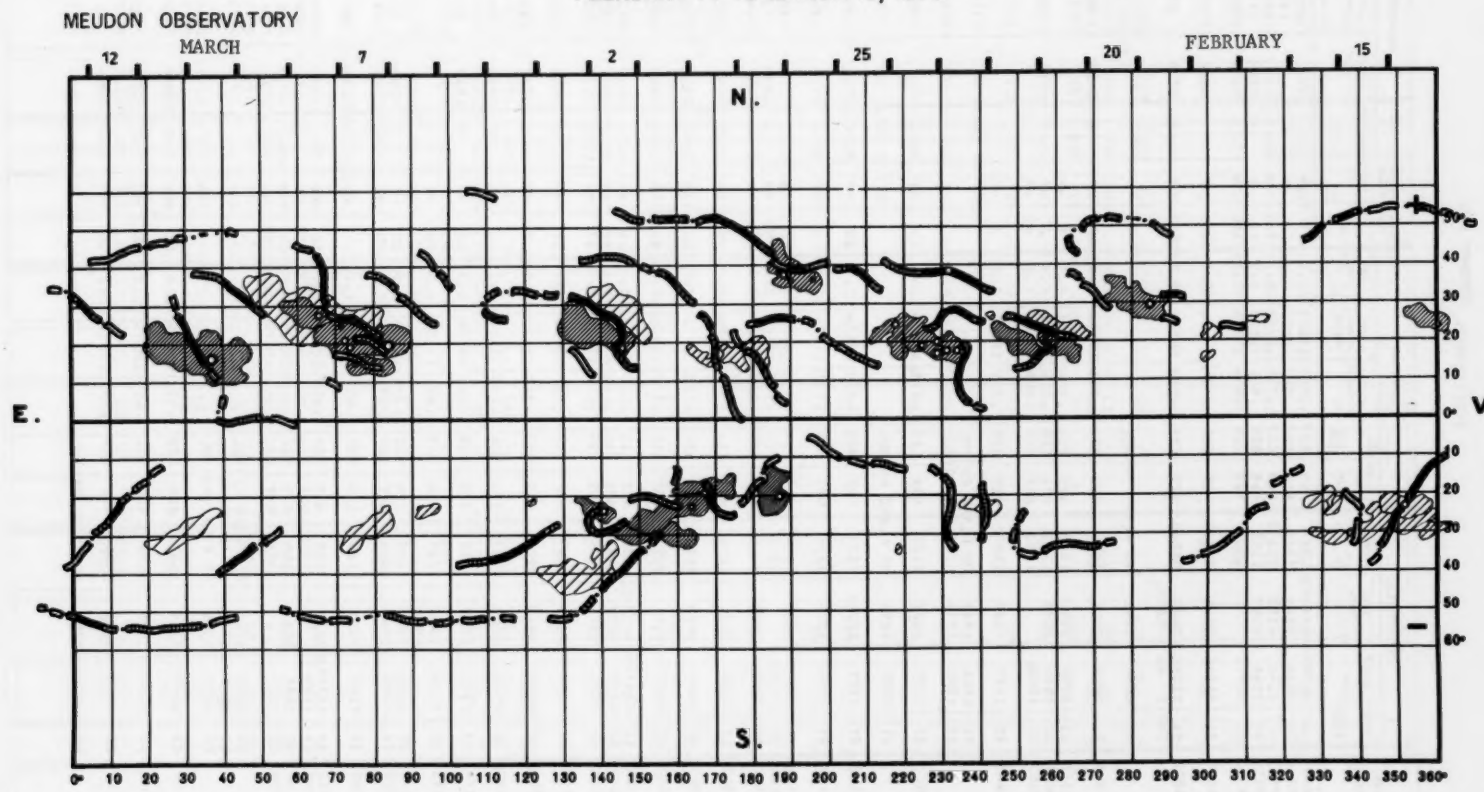
MEUDON OBSERVATORY



SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1665

FEBRUARY 14 TO MARCH 13, 1978



7 Feb 78

Hα SOLAR FLARES

FEBRUARY 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	FEB																	
GRP65692	01	0124>9	0145+5	0218	N19	E27	.595	15126	3.1	54	1N				170	2.1		
PALE	01	0124	0145	0223	N21	E27	.613	15126	3.1	59	1N	3	V		195		F	
MANI	01	0141	0150	0219D	N19	E27	.595	15126	3.1	38D	-N	3	P		140	1.7	F	
MITK	01	0145	0149	0159	N18	E25	.565	15126	2.9	14	-N		C	0149	130	1.4	E	
VORO	01	0147E		0217	N20	E28	.614	15126	3.2	30D	1N		C	0149	197	2.5	E	
693 ABST	01	0604E	0614	0702D	N25	E60	.914	15131	5.8	58D	-F		P	0614	87	2.0	DJK	Y5
694 ABST	01	0732E	0808	0822D	S25	E85	.992	15132	7.7	50D	?F		P	0808	79		DJK	Y5
	IMP.1 NO † CATA1																	
	01	0856	0902	NO FLARE PATROL														
695 MONT	01	0919	0925	0932	N22	E90	1.001	15135	8.1	13	-F		C	0925	20		B	Y5
GRP65696	01	0955	0959	1003	N25	E59	.908	15131	5.8	8	-F							
MONT	01	0955	0959	1003	N26	E60	.916	15131	5.9	8	-F		C	0959	50			
KANZ	01	1000E		1003	N25	E59	.908	15131	5.8	3D	-F							
697 KANZ	01	1120	1120	1123	N15	E06	.372	15125	1.9	3	-F						E	Y5
	01	1416	1700	NO FLARE PATROL														
	01	1706	1735	NO FLARE PATROL														
698 PALE	01	2125	2127	2128	N21	E16	.519	15126	3.1	3	-F	3	C		20		DE	Y5
	01	2235	2250	NO FLARE PATROL														
699 PALE	01	2307	2321U	2332	S28	W04	.380	15124	1.7	25	-F	3	C		27		DE	Y5
700 PALE	01	2315	2315	2321	N21	E15	.511	15126	3.1	6	-F	3	C		28		DE	Y5
GRP65701	01	2359	0002	0017	N21	E16	.519	15126	3.2	18	-N				50	.6	E	
VORO	02	0003E		0018	N22	E18	.547	15126	3.4	15D	-B		C	0005	72	.8	E	
PALE	01	2359	2402	0016	N21	E15	.511	15126	3.1	17	-N	2	C		44		DE	
702 VORO	02	0130	0131	0135	N20	E11	.473	15126	2.9	5	-B		C	0131	90	1.0	D	Y5
703 VORO	02	0422	0429	0459D	S18	W02	.209		2.0	37D	1N		C	0429	206	2.2	E	Y5
704 VORO	02	0433	0441	0459D	N22	E16	.532	15126	3.4	26D	-B		C	0441	125	1.4	E	Y5
GRP65705	02	0817+6	0823+2	0836	N20	E11	.473	15126	3.2	19	-F				70	.8	F	
MANI	02	0817	0823	0835	N21	E13	.499	15126	3.3	18	-N	3	P		80	1.0	F	
TEHR	02	0823	0825	0836	N19	E09	.448	15126	3.0	13	-F	1	C		64		F	
706 HTPR	02	0842	0844	0903	N22	E12	.507	15126	3.3	21	-F		C	0844	20	.2	E	Y5
707 HTPR	02	0859	0902	0906	S17	W17	.340	15123	1.1	7	-F		C	0902	10	.1		Y5
708 HTPR	02	0907	0908	0921	S33	W14	.498	15124	1.3	14	-F		C	0908	10	.1		Y5
709 HTPR	02	0945	1002	1017	S28	W15	.440	15124	1.3	32	-F		C	1002	20	.2	E	Y5
GRP65710	02	1039	1046 1050	1105	S24	W17	.411	15124	1.2	26	-F						E	
HTPR	02	1039	1050	1105	S24	W13	.372	15124	1.5	26	-F		C	1050	30	.3	E	
HTPR	02	1045	1046	1050	S25	W22	.474	15124	31.8	5	-F		C	1046	10	.1		
711 HTPR	02	1128	1131	1135	S29	W20	.495	15124	1.0	7	-F		C	1131	20	.2	E	Y5
GRP65712	02	1133+4	1141	1155	N19	E07	.439	15126	3.0	22	-B							
HTPR	02	1133		1150D	N22	E11	.501	15126	3.3	17D	1B		C	1136	250	2.5	E	
TEHR	02	1137	1141	1155	N19	E07	.439	15126	3.0	18	-N	1	C		95		F	
HTPR	02	1137		1150D	N18	E03	.411	15126	2.7	13D	-F		C	1140	10	.1		
	02	1204	1242	NO FLARE PATROL														
	02	1247	1305	NO FLARE PATROL														
	02	1308	1326	NO FLARE PATROL														
713 HTPR	02	1352	1354	1405	N26	E78	.990	15134	8.4	13	-F		C	1354	40	.9		Y5
714 MCMA	02	1418	1422	1440	S30	W14	.459	15124	1.5	22	-F		C	1422	60	.7	E	Y5
715 MCMA	02	1457	1459	1505	N22	E85	.999	15135	9.0	8	-F		C	1459			D	Y5
	02	1522	1557	NO FLARE PATROL														

Hα SOLAR FLARES

FEBRUARY 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	FEB																	
716 HCMA	02	1606	1608	1643	S30	W17	.481	15124	1.4	37	-N		C	1608	45	.5	EH	Y5
717 HCMA	02	1608	1610	1630D	N22	E76	.983	15135	8.4	22D	-F		C	1610			D	Y5
718 HCMA	02	1630	1646	1655	N22	E76	.983	15135	8.4	25	-N		C	1646			E	Y5
719 HCMA	02	1720	1730	1738D	S30	W16	.473	15124	1.5	18D	-N		C	1730	60	.6	EH	Y5
720 HCMA	02	1734		1753D	N22	E74	.977	15135	8.3	19D	-N		C	1747			D	Y5
GRP65721	02	1823>9	1825	1925	S28	W16	.449	15124	1.6	62	-F				100	1.1	H	
			1842+3															
HCMA	02	1823	1825	1840	S30	W18	.489	15124	1.4	17	-N		C	1825	35	.4	EH	
HCMA	02	1830	1842	1900D	S27	W16	.436	15124	1.6	30D	-N		C	1842	75	.8	E	
PALE	02	1838	1845	1925	S28	W15	.440	15124	1.7	47	-F	3	C		125		F H	
722 HCMA	02	1835	1840	1858	N22	E74	.977	15135	8.3	23	-N		C	1840	20		D	Y5
723 PALE	02	1914	1922	1932	N21	E04	.460	15126	3.1	18	-F	3	C		38			Y5
	02	2036	2126	NO FLARE PATROL														
724 PALE	02	2126	2126	2147	S28	W16	.449	15124	1.7	21	-F	3	C		27			Y5
725 PALE	02	2138	2147	2209D	N21	E03	.458	15126	3.1	31D	1N	3	C		289		FDE	Y5
	02	2209	2258	NO FLARE PATROL														
726 PALE	02	2336E	2337U	2355D	N21	E03	.458	15126	3.2	19D	-N	3	C		126		FDE	Y5
727 VORO	03	0120	0121	0122	S29	W25	.543	15124	1.2	2	-B		C	0121	45	.5	DH	Y5
728 VORO	03	0143	0146	0150	N28	E72	.975	15134	8.5	7	-N		C	0146	54		D	Y5
729 PALE	03	0157	0158	0207	S28	W18	.465	15124	1.7	10	-F	3	C		54		F	Y5
GRP65730	03	0216+0	0218	0239	N26	E71	.970	15134	8.4	23	1N				100		H	
			0227+3															
VORO	03	0216	0227	0239	N27	E70	.967	15134	8.3	23	1N		C	0227	134		H	
PALE	03	0216E	0218U	0252D	N25	E70	.965	15134	8.3	36D	-N	3	C		92		FDE	
HITK	03	0228E	0230	0238	N27	E72	.974	15134	8.5	10D	-F		C	0230	70		E	
GRP65731	03	0254+2	0258+1	0308	S27	W22	.493	15124	1.5	14	-B				80	.9	H	
VORO	03	0254	0258	0309	S27	W22	.493	15124	1.5	15	-B		C	0258	81	.9	D	
HITK	03	0256	0259	0306	S28	W22	.503	15124	1.5	10	-B		C	0259	90	1.1	H	
732 CULG	03	0310	0326	0411	N31	W09	.618	15136	2.5	61	-F		P	0326	30	.4		Y5
GRP65733	03	0320+0	0325+1	0335	S31	W24	.552	15124	1.3	15	-B				150	1.8	DH	
VORO	03	0320	0325	0334	S30	W24	.542	15124	1.3	14	-B		C	0325	108	1.2	DH	
HITK	03	0320	0325	0335	S31	W24	.552	15124	1.3	15	-B		C	0325	150	1.8	H	
CULG	03	0320	0326	0329D	S32	W24	.562	15124	1.3	9D	1N		P	0326	200	2.4	T	
734 VORO	03	0409	0412	0419	N29	E70	.969	15134	8.4	10	-B		C	0412	63		D	Y5
735 VORO	03	0443	0446	0500D	N21	E66	.941	15135	8.1	17D	1N		C	0446	125		E	Y5
736 CULG	03	0505E	0507	0602	N18	E66	.936	15135	8.2	57D	-N		C	0507	40			Y5
	03	0556	0602	NO FLARE PATROL														
GRP65737	03	0736>9	0741	0806	S28	W26	.544	15124	1.4	30	-N				70	.8		
			0750+1															
CULG	03	0736	0741	0750	S30	W28	.581	15124	1.2	14	-F		C	0741	40	.5	T	
CULG	03	0746	0751	0816D	S26	W14	.406	15124	2.3	30D	-F		C	0751	60	.7	T	
CULG	03	0749	0750	0756	S29	W24	.533	15124	1.5	7	-N		C	0750	15	.2	T	
CATA	03	0750	0750	0755	S28	W26	.544	15124	1.4	5	-B	2	C	0750	56	.6		
GRP65738	03	0758+7	0803	0810	S32	W28	.598	15124	1.2	12	-N				50	.6		
CULG	03	0758	0803	0810	S33	W28	.607	15124	1.2	12	-N		C	0803	40	.5	T	
CATA	03	0805	0805	0805D	S32	W28	.598	15124	1.2		-B	2	P	0805	56	.7		
GRP65739	03	0803	0815	0820	N20	E61	.909	15135	7.9	17	-N							
CULG	03	0803	0815U	0816D	N20	E63	.922	15135	8.1	13D	1F		P	0815	80	2.0		
HTPR	03	0806E		0820	N21	E60	.905	15135	7.8	14D	-N		C	0806	100	2.0		
740 HTPR	03	0837	0840	0843	N20	E60	.903	15134	7.9	6	-F		C	0840	50	1.0		Y5

Hα SOLAR FLARES

FEBRUARY 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS		MEASUREMENTS			REMARKS	
					APPROX		CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY			CONC	TYPE	TIME UT	MEAS. AREA	CORR AREA		
	DATE FEB	START	MAX. PHASE	END	LAT.	MER. DIST.				MIN.					Mill. of Disk	Sq. Deg.		
GRP65741	03	0837+0	0840+1	0845	N27	E66	.950	15135	8.3	8	-F				50			
MONT	03	0837	0841	0846	N27	E67	.955	15135	8.4	9	-F		C	0841	50			
HTPR	03	0837	0840	0843	N27	E66	.950	15135	8.3	6	-F		C	0840	50	1.1		
742 MONT	03	0843	0846	0852	N35	W13	.681	15136	2.4	9	-F		C	0846	40		E	YS
GRP65743	03	0845+2	0851+1	0909	N23	W03	.489	15126	3.1	24	-F				120	1.4	E	
MONT	03	0845	0852	0906	N22	W03	.474	15126	3.1	21	-N		C	0852	100		E	
HTPR	03	0847	0851	0912	N23	W02	.488	15126	3.2	25	-F		C	0851	80	.8		
KHAR	03	0848E		0904D	N24	E00	.502	15126	3.4	16D	-F		P	0853	165	1.7	E	
HTPR	03	0850	0856	0906	N22	W10	.497	15126	2.6	16	-F		C	0856	20	.2		
GRP65744	03	0931+1	0932+0	0937	N23	E66	.944	15135	8.3	6	-N				50			
MONT	03	0931	0932	0936	N27	E67	.955	15135	8.4	5	-B		C	0932	50			
HTPR	03	0932	0932	0937	N20	E65	.934	15135	8.3	5	-N		C	0932	60	1.2		
745 KHAR	03	0950E		0957D	N26	E67	.953	15134	8.4	7D	-F		V	0953			D	YS
746 MONT	03	1021	1026	1044	N19	E62	.914	15135	8.1	23	-N		C	1026	80		E	YS
747 KHAR	03	1023E	1027	1047D	N20	E05	.448	15126	3.8	24D	-F		P	1035			E	YS
748 HTPR	03	1104	1106	1109	S31	W29	.599	15124	1.3	5	-F		C	1106	20	.2		YS
749 KHAR	03	1130E		1143D	N20	E62	.916	15135	8.1	13D	-F		P				D	YS
750 MONT	03	1250	1255	1304	S26	W22	.483	15124	1.9	14	-F		C	1255	40		E	YS
GRP65751	03	1305+1	1307+0	1312	N23	E65	.939	15135	8.4	7	-N				50			
HTPR	03	1305	1307	1310	N20	E65	.934	15135	8.4	5	-F		C	1307	50	1.0		
MONT	03	1306	1307	1313	N27	E65	.945	15135	8.4	7	-B		C	1307	50			
752 MONT	03	1306	1309	1314	S30	W31	.611	15124	1.2	8	-F	*	C	1309	40		DH	YS
GRP65753	03	1346+3	1349+0	1357	S30	W32	.621	15124	1.2	11	-B				50	.6	DH	
MCMA	03	1346	1349	1355	S31	W32	.628	15124	1.2	9	-B		C	1349	60	.8	DH	
HTPR	03	1348		1349D	S30	W32	.621	15124	1.2	1D	-N		C	1349	50	.6		
RAMY	03	1349	1349	1358	S30	W23	.533	15124	1.9	9	-B	3	C		47		DE H	
754 MCMA	03	1359	1403	1420	N20	E62	.916	15135	8.2	21	-B		C	1403	50	1.2	E	YS
755 MCMA	03	1410		1445	N34	W17	.685	15136	2.3	35	-N		C	1415	25	.3	D	YS
756 MCMA	03	1450	1455	1505	N34	W17	.685	15136	2.3	15	-N		C	1455	50	.7	E	YS
757 MCMA	03	1522		1530D	N22	W10	.497	15126	2.9	8D	-N		C	1524	50	.6	E	YS
GRP65758	03	1536+0	1539+0	1543	S30	W33	.631	15124	1.2	7	-N				50	.7	EH	
MCMA	03	1536	1539	1543	S32	W33	.645	15124	1.2	7	-B		C	1539	50	.7	EH	
HTPR	03	1536	1539	1541	S30	W33	.631	15124	1.2	5	-F		C	1539	30	.3		
HTPR	03	1539	1540	1542	S28	W35	.639	15124	1.0	3	-F		C	1540	30	.3		
759 MCMA	03	1605	1611	1645	N21	E57	.884	15135	7.9	40	1B		C	1611	150	3.1	E	YS
760 MCMA	03	1634	1646	1725	N34	W20	.699	15136	2.2	51	-B		C	1646	60	.9	E	YS
761 MCMA	03	1701	1708	1720	N20	E59	.896	15135	8.1	19	-N		C	1708	75	1.5	E	YS
762 MCMA	03	1728	1730	1800	N28	E60	.921	15134	8.2	32	-B		C	1730	30	.8	D	YS
763 MCMA	03	1750	1810	1837D	N34	W20	.699	15136	2.2	47D	-N		C	1810	50	.7	E	YS
764 MCMA	03	1802	1804	1815	N20	E58	.889	15135	8.1	13	-F		C	1804	60	1.2	E	YS
765 MCMA	03	1803	1809	1819	S28	W33	.618	15124	1.3	16	-N		C	1809	30	.4	D	YS
766 MCMA	03	1806	1820	1832	N28	E59	.916	15134	8.2	26	-F	*	C	1820	25	.6	D	YS
767 MCMA	03	1838	1845	1915D	N34	W20	.699	15136	2.3	37D	-N		C	1845	50	.7	E	YS
768 MCMA	03	1850	1856	1915	N28	E59	.916	15134	8.2	25	-N		C	1856	20	.5	D	YS
769 MCMA	03	1912	1918	1923	S28	W34	.628	15124	1.3	11	-N		C	1918	25	.3	D	YS
770 MCMA	03	1951E	2003	2013D	S32	W26	.580	15124	1.9	22D	1N		C	2003	170	2.1	E	YS

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE FEB	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.		
GRP65771	03	2012	2343	0017D	N20	E56	.874	15135	8.0	245	-F							
PALE	03	2012	2343	0017D	N20	E53	.851	15135	7.8	245D	1F	3	C		165			
MITK	03	2328E		2356D	N20	E60	.903	15135	8.5	28D	-F		C					
	03	2015	2039	NO FLARE PATROL														
772 MCMA	03	2015E		2015D	N34	W22	.710	15136	2.2		-B		P	2015	80	1.2	E	Y5
773 PALE	03	2026E	2027U	2158D	N33	W18	.678	15136	2.5	92D	2B	3	C		594		FDE	Y5
GRP65774	03	2116+2	2123+2	2144	N21	W09	.478	15126	3.2	28	-N							
PALE	03	2116	2125	2154	N21	W10	.483	15126	3.1	38	-N	3	C		117		DE	
CULG	03	2118	2123	2134	N22	W08	.488	15126	3.3	16	-N		C	2123	35	.4		
775 CULG	04	0024	0028	0032	S28	W35	.638	15124	1.4	8	-B		C	0028	20	.2		Y5
	04	0551	0556	NO FLARE PATROL														
	04	0559	0600	NO FLARE PATROL														
	04	0605	0621	NO FLARE PATROL														
	04	0628	0638	NO FLARE PATROL														
	04	0639	0658	NO FLARE PATROL														
776 ABST	04	0721	0722	0723D	S28	W40	.691	15124	1.3	2D	-F		P	0722	44	.6	DV	Y5
777 ABST	04	0742	0743	0745	N18	W32	.640	15125	1.9	3	-F		C	0743	105	1.4	EV	Y5
GRP65778	04	0859+6	0901+4	0907	S26	W41	.692	15124	1.3	8	-N				140	2.0	EZ	
HTPR	04	0859	0901	0907	S26	W40	.681	15124	1.4	8	-N		C	0901	40	.5	E	
ABST	04	0859	0901	0905	S25	W41	.688	15124	1.3	6	-F		C	0901	140	1.8	EZ	
CATA	04	0905	0905	0915	S27	W41	.696	15124	1.3	10	1B	2	C	0905	168	2.4		
779 HTPR	04	0907	0910	0918	N20	E50	.826	15135	8.1	11	-F		C	0910	10	.1		Y5
	04	1102	1106	NO FLARE PATROL														
	04	1126	1129	NO FLARE PATROL														
	04	1200	1215	NO FLARE PATROL														
	04	1226	1253	NO FLARE PATROL														
	04	1254	1305	NO FLARE PATROL														
	04	1307	1317	NO FLARE PATROL														
	04	1350	1356	NO FLARE PATROL														
	04	1402	1408	NO FLARE PATROL														
	04	1409	1425	NO FLARE PATROL														
780 HTPR	04	1521	1524	1532	N34	W26	.733	15136	2.7	11	-F		C	1524	30	.3		Y5
781 MCMA	04	1650	1651	1655	S32	W45	.757	15124	1.3	5	-N		C	1651	25	.4	E	Y5
782 MCMA	04	1710	1713	1734D	N16	W37	.680	15125	1.9	24D	-F		C	1713	80	1.2	E	Y5
	04	1734	1750	NO FLARE PATROL														
783 PALE	04	1814	1817	1858	N20	E42	.754	15135	7.9	44	-F	3	C		67		DE	Y5
784 PALE	04	1853	1857	1906	N33	W30	.749	15136	2.5	13	-N	3	C		31		DE	Y5
	04	1915	2006	NO FLARE PATROL														
785 CULG	04	2029	2038	2110	S30	W38	.681	15124	2.0	41	-F		C	2038	80	1.1		Y5
786 CULG	04	2241	2248	2304	S18	W54	.808	15123	31.9	23	-F		C	2248	50	.9		Y5
787 PALE	04	2249	2249	2301	N25	E45	.806	15134	8.3	12	-F	3	C		69		DE	Y5
788 MITK	05	0014	0017	0026	N18	E39	.713	15135	7.9	12	-F		C	0017	120	1.8		Y5
789 MITK	05	0054	0054	0106	N18	E40	.724	15135	8.0	12	-N		C	0054	90	1.4		Y5
790 VORO	05	0055	0057	0101	N14	E90	1.000	15139	11.8	6	-N		C	0057	27			Y5
791 PALE	05	0107	0109	0112	N21	E36	.703	15135	7.7	5	-F	3	C		25		F	Y5
GRP65792	05	0116+8	0125 0131+5	0148	N19	E37	.699	15135	7.8	32	-N				140	1.9	J	
PALE	05	0116	0131	0156	N21	E35	.693	15135	7.7	40	1F	3	C		150		F	
VORO	05	0124	0125	0129	N18	E40	.724	15135	8.1	5	-B		C	0125	116	1.6	DJ	
VORO	05	0133	0136	0140	N18	E40	.724	15135	8.1	7	-B		C	0136	134	1.9	EJ	

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.		
	FEB																	
793 HITK	05	0358	0400	0407	N18	E37	.693	15135	7.9	9	-F		C	0400	100	1.4		Y5
794 VORO	05	0429	0431	0435	N17	E38	.697	15135	8.0	6	-B		C	0431	61	1.1	EJ	Y5
795 ABST	05	0728	0732	0750	S28	E32	.606	15132	7.7	22	-F		C	0732	148	1.9	EJK	Y5
GRP65796	05	0756>9	0807+4	0815	N17	E37	.687	15135	8.1	19	-F						DJ	
ABST	05	0756	0811	0819	N17	E38	.697	15135	8.2	23	-N		C	0811	79	1.1	DJ	
KANZ	05	0807	0807	0811	N17	E37	.687	15135	8.1	4	-F							
797 ABST	05	0820	0823	0832	N13	E90	1.000	15139	12.1	12	?N		C	0823	105		AEJA	Y5
	IMP>1 NO > CATA1																	
798 ABST	05	0906	0907	0914	N17	E37	.687	15135	8.2	8	-F		C	0907	70	1.0	FJV	Y5
799 HTPR	05	1037	1040	1056	N18	E40	.724	15135	8.4	19	-F		C	1040	30	.4	E	Y5
800 HTPR	05	1054	1058	1110	N24	W26	.636	15126	3.5	16	-F		C	1058	10	.1		Y5
801 HTPR	05	1122E		1140	S27	W47	.757	15124	1.9	18D	-F		C	1125	20	.3		Y5
802 CATA	05	1140	1155	1205	N14	E90	1.000	15139	12.2	25	?N	2	C	1155	84		T	Y5
	IMP>1 NO > HTPR2																	
803 RAMY	05	1220E	1226	1232	N19	E34	.669	15135	8.1	12D	-N	3	C		86		DE	Y5
804 CATA	05	1310	1315	1340	N14	E90	1.000	15139	12.3	30	?N	2	C	1315	168			Y5
	IMP>2 NO > RAMY2																	
805 RAMY	05	1326	1332	1343D	N19	E36	.689	15135	8.3	17D	-F	4	C		42		DE	Y5
806 RAMY	05	1412	1415	1424D	S31	W45	.752	15124	2.2	12D	-F	4	C		28			Y5
807 MCMA	05	1610E		1650D	N16	E90	1.000	15139	12.4	40D	-N		C	1624			E	Y5
808 RAMY	05	1618	1627	1631	S28	E30	.584	15132	7.9	13	-F	4	C		19			Y5
GRP65809	05	1623+3	1628+1	1641	S29	W47	.763	15124	2.2	18	-N				40	.6	H	
MCMA	05	1623	1628	1640	S28	W48	.769	15124	2.1	17	-N		C	1628	30	.5	E	
RAMY	05	1626	1629	1641	S31	W46	.761	15124	2.2	15	-N	4	C		49		F H	
810 PALE	05	1953	1959	2002	N15	E80	.990	15139	11.8	9	-N	3	C		18		DE	Y5
	05	2004	2034	NO FLARE PATROL														
811 CULG	05	2335	2340	0004	N13	E84	.997	15139	12.3	29	-F		C	2340	25			Y5
812 CULG	06	0418	0429	0455	N11	E74	.969	15139	11.7	37	-F		C	0429	25			Y5
813 CULG	06	0513	0521	0527	N12	E70	.951	15139	11.5	14	-N		C	0521	25			Y5
814 CULG	06	0634	0652	0706	N13	E75	.974	15139	11.9	32	-N		C	0652	30			Y5
	06	0810	0829	NO FLARE PATROL														
GRP65815	06	0830+2	0830+3	0850	N20	W39	.726	15126	3.4	20	-N				80	1.1	E	
CATA	06	0830E	0830	0850	N20	W39	.726	15126	3.4	20D	-B	2	P	0830	84	1.2		
HTPR	06	0832	0833	0850	N20	W40	.735	15126	3.4	18	-N		C	0833	80	1.0	E	
816 HTPR	06	0928	0931	0936	N20	W40	.735	15126	3.4	8	-F		C	0931	10	.1		Y5
817 HTPR	06	0950	0956	1002	N20	W40	.735	15126	3.4	12	-F		C	0956	10	.1		Y5
818 MONT	06	1118	1120	1123	N27	E26	.666	15134	8.4	5	-F		C	1120	20		D	Y5
819 HTPR	06	1203	1207	1214	S27	E21	.481	15132	8.1	11	-F		C	1207	10	.1		Y5
820 HTPR	06	1215	1219	1222	N20	W39	.726	15126	3.6	7	-F		C	1219	10	.1		Y5
	06	1311	1312	NO FLARE PATROL														
	06	1313	1323	NO FLARE PATROL														
821 MCMA	06	1431	1433	1437	N18	W44	.764	15126	3.3	6	-N		C	1433	40	.6	E	Y5
822 MCMA	06	1513	1515	1523	N14	E68	.942	15139	11.7	10	-N		C	1515	30	.9	D	Y5
823 MCMA	06	1529	1531	1536	N14	E68	.942	15139	11.7	7	-F		C	1531	30	.9	D	Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
					APPROX		CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY			COND.	TYPE	TIME	MEAS. AREA	CORR AREA		
	DATE FEB	START	MAX. PHASE	END	LAT.	MER. DIST.				MIN.				UT	Mill. of Disk	Sq. Deg.		
824 HTPR	06	1552	1554	1556	N25	E16	.574	15134	7.9	4	-F		C	1554	10	.1		Y5
GRP65825	06	1608+4	1609+5	1621	S27	W60	.870	15124	2.2	13	-F				25	.5	D	
HTPR	06	1608	1609	1619	S27	W60	.870	15124	2.2	11	-F		C	1609	20	.4		
MCMA	06	1612	1614	1622	S28	W61	.879	15124	2.1	10	-F		C	1614	25	.5	D	
826 HTPR	06	1620		1630D	N25	E16	.574	15134	7.9	10D	-F		C	1630	20	.2		Y5
	06	1630	1632	NO FLARE PATROL														
	06	1647	1700	NO FLARE PATROL														
827 MCMA	06	1733E		1734D	N18	W50	.819	15126	3.0	1D	-N		P	1733	50	.9	E	Y5
	06	1734	1849	NO FLARE PATROL														
	06	1956	2005	NO FLARE PATROL														
828 CULG	06	2142	2151U	2216	N23	W48	.822	15126	3.3	34	-F		C	2151	30	.5		Y5
829 CULG	06	2150	2229U	2310	N25	E16	.574	15134	8.1	80	-F		C	2229	90	1.2	F	Y5
830 PALE	06	2159	2228	2255	N20	E25	.588	15135	8.8	56	-F	3	C		28		F	Y5
GRP65831	06	2233+1	2236 2244	2251	N13	E60	.888	15139	11.4	18	-F						F	
CULG	06	2233	2244U	2300	N13	E59	.881	15139	11.4	27	-F		C	2244	30	.6		
PALE	06	2234	2236	2241	N13	E61	.896	15139	11.5	7	-N	3	C		12		F	
832 CULG	06	2312	2334U	2347D	S44	W60	.901	15144	2.5	35D	-F		C	2334	25	.6		Y5
833 PALE	06	2334	2336	2350	N12	E64	.915	15139	11.8	16	-N	3	C		44		F	Y5
834 CULG	07	0108	0128	0150	N37	W59	.940	15136	2.6	42	?F		C	0128	140	3.5	S	Y5
	IMP+1 NO ! MTK2 PALE1 VORO1																	
GRP65835	07	0118>9	0220+1	0227	N14	E58	.875	15139	11.4	69	-N				70	1.4	H	
PALE	07	0118	0220	0231	N12	E59	.879	15139	11.5	73	-N	3	C		70		F	
VORO	07	0218	0221	0223	N16	E57	.872	15139	11.4	5	-B		C	0221	72	1.4	DH	
836 VORO	07	0312	0313	0314	N16	E56	.864	15139	11.3	2	-N		C	0313	18	.3	D	Y5
837 CULG	07	0519	0533	0539	N28	E16	.612	15134	8.4	20	-N		C	0533	40	.5		Y5
838 CULG	07	0525	0531	0535	N13	E53	.830	15139	11.2	10	-F		C	0531	20	.4	F	Y5
839 CULG	07	0614	0617	0630	S15	W90	1.000	15123	31.5	16	-N		C	0617	30			Y5
	07	0653	0705	NO FLARE PATROL														
	07	0730	0735	NO FLARE PATROL														
840 HTPR	07	0822	0837	0900	N17	E08	.418	15135	7.9	38	-N		C	0837	90	.9	E	Y5
GRP65841	07	0920	0921	0935	N19	E05	.437	15135	7.8	15	-F							
HTPR	07	0920	0921	0935	N20	E05	.452	15135	7.8	15	-F		C	0921	30	.3	E	
KANZ	07	0923E		0934	N19	E06	.440	15135	7.8	11D	-F						D	
GRP65842	07	1043	1043	1057	N20	E06	.455	15135	7.9	14	-F						E	
HTPR	07	1043	1043	1057	N20	E05	.452	15135	7.8	14	-F		C	1043	30	.3	E	
KANZ	07	1045E		1057	N20	E07	.459	15135	8.0	12D	-F						E	
843 MONT	07	1138	1143	1149	N13	E51	.812	15139	11.3	11	-F		C	1143	50		E	Y5
	07	1208	1239	NO FLARE PATROL														
	07	1246	1256	NO FLARE PATROL														
	07	1258	1306	NO FLARE PATROL														
844 HTPR	07	1324	1330	1335	N13	E50	.802	15139	11.3	11	-F		C	1330	30	.3		Y5
GRP65845	07	1425>9	1503	1525D	N14	E52	.824	15139	11.5	60	-N						EKL	
MCMA	07	1425E		1600D	N15	E55	.853	15139	11.7	95D	1N		C	1500	220	4.2	EKL	
HTPR	07	1500	1503	1525	N13	E49	.792	15139	11.3	25	-F		C	1503	60		E	
846 HTPR	07	1452	1500	1509	N17	E08	.418	15135	8.2	17	-F		C	1500	20	.2	E	Y5
GRP65847	07	1527+0	1538+0	1610	N26	E06	.544	15134	8.1	43	-F				60	.7	E	
MCMA	07	1527	1538	1620D	N27	E06	.558	15134	8.1	53D	-N		C	1538	80	1.0	E	
HTPR	07	1527	1538	1600	N26	E07	.546	15134	8.2	33	-F		C	1538	40	.4	E	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	GMR DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
848 MCMA	07	1658	1707	1709D	N35	W74	.987	15136	2.2	11D	-F		C	1707	20	.8	D Y5
849 MCMA	07	1707	1709	1715	N17	W65	.929	15126	2.8	8	-N		C	1709	20	.7	D Y5
GRP65850	07	1707>9	1723 1758	1815D	N25	E05	.527	15134	8.1	68	-F						H
MCMA	07	1707	1723	1815	N26	E04	.539	15134	8.0	68	-N	*	C	1723	120	1.5	EH
PALE	07	1748	1758	1847	N25	E07	.532	15134	8.3	59	-F	*	C		40		F
851 PALE	07	1825	1830	1836	N14	E53	.833	15139	11.7	11	-N	3	C		25		F Y5
852 PALE	07	1842	1858	1937	N14	E54	.842	15139	11.8	55	-B	3	C		102		F Y5
GRP65853	07	1935+0	1940+3	1957	N26	W62	.929	15126	3.2	22	-F				25		
MCMA	07	1935	1940	1957	N26	W63	.934	15126	3.1	22	-N		C	1940	20	.6	D
PALE	07	1935	1943	1956	N26	W62	.929	15126	3.2	21	-F	3	C		25		F
854 PALE	07	1941	1950	2002	N14	E51	.815	15139	11.6	21	-N	3	C		66		F Y5
GRP65855	07	2013	2114+4	2140D	N12	E49	.789	15139	11.5	87	1N				160	2.6	U
PALE	07	2013	2114	2310	N13	E49	.792	15139	11.5	177	1N	3	C		185		UDE
CULG	07	2117E	2119	2140	N12	E49	.789	15139	11.6	23D	1N		C	2118	130	2.1	
856 CULG	07	2036	2040	2057	N16	W71	.960	15126	2.5	21	-F		C	2040	20		Y5
857 PALE	07	2039	2043	2053	N25	E06	.529	15134	8.3	14	-F	3	C		64		F Y5
858 PALE	07	2219	2226	2302	N25	E05	.527	15134	8.3	43	-F	3	C		132		DE F Y5
859 VORO	08	0022	0024	0026	N14	E47	.776	15139	11.5	4	-B		C	0024	45	.7	EJH Y5
860 CULG	08	0041	0045	0051	N19	W87	1.000	15139	1.5	10	-F		C	0045	30		Y5
861 VORO	08	0137	0140	0143	N15	E50	.809	15139	11.8	6	-B		C	0140	63	1.0	DJ Y5
GRP65862	08	0156+2	0203+2	0212	N14	E47	.776	15139	11.6	16	-B				90	1.4	JU
MITK	08	0156	0204	0212	N14	E47	.776	15139	11.6	16	-N		C	0204	80	1.3	
VORO	08	0158	0205	0210	N14	E46	.766	15139	11.5	12	-B		C	0205	90	1.3	DJ
PALE	07	2317	2603	0257	N14	E48	.786	15139	11.6	220	1B	3	C		255		U F
863 MITK	08	0312	0319	0328D	N14	E46	.766	15139	11.6	16D	-F		C	0319	50	.8	D Y5
GRP65864	08	0355+0	0359+1	0418D	N12	E45	.748	15139	11.5	23	2N				360	5.4	H
VORO	08	0355	0359	0407D	N12	E46	.758	15139	11.6	12D	1B		P	0359	323	4.9	EH
MANI	08	0355E	0400	0418D	N13	E45	.752	15139	11.5	23D	2N	2	P		400	6.3	F
865 CULG	08	0358E	0358E	0400	N17	W78	.986	15125	2.3	2D	-N		P	0358	20		Y5
GRP65866	08	0436E	0449+2	0515D	N13	E46	.762	15139	11.6	39	1F				220	3.3	
CULG	08	0436E	0451	0515D	N12	E44	.737	15139	11.5	39D	1N		C	0451	30	4.5	
MANI	08	0449E	0449U	0456D	N14	E48	.786	15139	11.8	7D	1F	2	P		150	2.5	
	08	0531	0536	NO FLARE PATROL													
867 CULG	08	0634	0636	0639	N17	W80	.991	15125	2.3	5	-F		C	0636	20		Y5
GRP65868	08	0640	0654 0718+5	0735	N13	E46	.762	15139	11.7	55	-F				60	.9	J
CULG	08	0640	0718	0735	N13	E47	.773	15139	11.8	55	-F		C	0718	60	1.0	
ABST	08	0649E	0654	0709	N09	E44	.725	15139	11.6	20D	-F		P	0654	70	1.0	DJ
ABST	08	0715E	0718	0735D	N13	E46	.762	15139	11.8	20D	1N		P	0718	201	3.1	FJ
HONT	08	0718E	0723	0726	N14	E47	.776	15139	11.8	8D	-F		C	0723	40		E
GRP65869	08	0711+1	0715+1 0726	0754	N26	W02	.538	15134	8.1	43	1N				200	2.4	JK
ABST	08	0649E	0715	0802	N26	W04	.540	15134	8.0	73D	1B		P	0715	314	3.8	FJK
ABST	08	0711	0716	0734	N27	E02	.552	15134	8.4	23	-N		C	0716	44	.5	DJK
MANI	08	0712	0716	0732	N26	W03	.539	15134	8.1	20	1B	3	P		250	3.1	
ATHN	08	0712	0715	0728	N26	W02	.538	15134	8.2	16	-N	1		0715	163	1.9	
HONT	08	0718E	0809	0825	N27	W01	.552	15134	8.2	67D	1N		C	0809	250		F
ABST	08	0718E	0726	0801	N27	E04	.555	15134	8.6	43D	-F		C	0726	79	1.0	EJ
HTPR	08	0745E		0801	N26	W04	.540	15134	8.0	16D	-F		C	0748	100	1.0	E
GRP65870	08	0714>9	0728+1	0740	N17	W79	.989	15125	2.4	26	-N				80		DJV
CULG	08	0714	0729	0740	N17	W79	.989	15125	2.4	26	1N		C	0729	70		
ABST	08	0727	0728	0736D	N17	W80	.991	15125	2.3	9D	-N		P	0728	96		DJV

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
GRP65871	08	0719+0	0721+0	0734	N18	W04	.419	15135	8.0	15	-F				90	1.0	J
CULG	08	0707	0715	0804D	N15	W04	.372	15135	8.0	57D	1N		C	0715	180	2.0	F
ABST	08	0719	0721	0731	N21	W07	.474	15135	7.8	12	-F		C	0721	114	1.3	EJ
ABST	08	0719	0721	0734D	N18	W02	.415	15135	8.2	15D	-F		P	0721	79	.9	DJ
872 HTPR	08	0830	0832	0834	N14	E46	.766	15139	11.8	4	-F		C	0832	20	.3	Y5
GRP65873	08	0844+1	0846+1	0849	N14	E47	.776	15139	11.9	5	-F						J
HTPR	08	0844	0847	0849	N14	E46	.766	15139	11.8	5	-F		C	0847	20	.3	
MONT	08	0845	0846	0849	N14	E47	.776	15139	11.9	4	-F		C	0846	50		D
ABST	08	0847E	0847	0850D	N14	E48	.786	15139	12.0	3D	1N		P	0847	175	2.9	EJ
GRP65874	08	0902+2	0906+0	0920	N19	W02	.431	15135	8.2	18	-F				45	.5	E
HTPR	08	0902	0906	0920	N19	W03	.433	15135	8.2	18	-F		C	0906	30	.3	E
MONT	08	0904	0906	0919	N20	W01	.446	15135	8.3	15	-F		C	0906	60		E
875 MONT	08	0918	0920	0925	N13	E39	.687	15139	11.3	7	-N		C	0920	70		D Y5
GRP65876	08	1046+1	1048+0	1053	N14	E45	.756	15139	11.8	7	-F						D
MONT	08	1046	1048	1054	N14	E46	.766	15139	11.9	8	-F		C	1048	50		D
HTPR	08	1047	1048	1052	N14	E45	.756	15139	11.8	5	-F		C	1048	10	.1	
GRP65877	08	1111+1	1114 1122	1155	N27	W03	.553	15134	8.2	44	-N						E
HTPR	08	1111	1114	1138	N27	W05	.557	15134	8.1	27	-F		C	1114	20	.2	E
MONT	08	1112	1122	1155D	N28	W02	.567	15134	8.3	43D	-N		C	1122	80		E
CATA	08	1120E	1145	1210	N26	W03	.539	15134	8.2	50D	1B	1	P	1145	224	2.7	
878 MONT	08	1119	1121	1125	N13	E38	.675	15139	11.3	6	-F		C	1121	40		E Y5
GRP65879	08	1225+1	1228+4 1303	1315	N27	W03	.553	15134	8.3	50	-F				45	.5	E
HTPR	08	1225	1228	1315	N26	W05	.542	15134	8.1	50	-F		C	1228	30	.3	E
HTPR	08	1225	1303	1315	N26	W05	.542	15134	8.1	50	-F		C				
MONT	08	1226	1232	1234D	N28	W02	.567	15134	8.4	8D	-F		C	1232	60		E
880 HTPR	08	1343	1346	1353	N21	W04	.466	15135	8.3	10	-F		C	1346	20	.2	E Y5
881 RAMY	08	1406	1406	1415	N15	E41	.719	15139	11.7	9	-B	4	C		22		F Y5
GRP65882	08	1418>9	1419 1434	1438	N14	E43	.735	15139	11.8	20	-N						H
RAMY	08	1418	1419	1440	N15	E41	.719	15139	11.7	22	-B	4	C		49		F H
HTPR	08	1432	1434	1436	N14	E45	.756	15139	12.0	4	-N		C	1434	60	.8	E
GRP65883	08	1419+4	1424+2	1454D	N25	W05	.528	15134	8.2	35	-N				80	.9	K
HTPR	08	1419	1426	1525	N26	W05	.542	15134	8.2	66	-N		C	1426	80	.9	EK
RAMY	08	1423	1424	1454	N25	W06	.530	15134	8.1	31	-N	4	C		81		FDE
884 RAMY	08	1441	1444	1450D	N15	E45	.760	15139	12.0	9D	-B	4	C		63		F H Y5
885 MCMA	08	1442E		1501	N19	W86	1.000	15125	2.2	19D	-N		C	1449			D Y5
886 RAMY	08	1449	1450U	1455	N17	W73	.970	15126	3.1	6	-N	4	C		13		DE Y5
887 HTPR	08	1506	1512	1520	N21	W05	.468	15135	8.3	14	-F		C	1512	20	.2	Y5
GRP65888	08	1555+8	1602+3	1609	N14	E38	.681	15139	11.5	14	-N						H
HTPR	08	1555	1602	1608	N13	E37	.664	15139	11.4	13	-F		C	1602	20	.2	E
RAMY	08	1603	1605	1610D	N15	E40	.708	15139	11.7	7D	-B	4	C		56		F H
889 MCMA	08	1620	1622	1624D	N19	W87	1.000	15125	2.2	4D	-N		C	1622			D Y5
GRP65890	08	1629	1631	1651	N26	W08	.550	15134	8.1	22	-N						E
RAMY	08	1629	1631	1647	N25	W07	.533	15134	8.2	18	-N	4	C		59		
MCMA	08	1640E		1654D	N27	W10	.571	15134	7.9	14D	-F		C	1640	50	.6	E
GRP65891	08	1638	1640	1649	N14	E42	.725	15139	11.8	11	-N				80	1.1	EHL
RAMY	08	1638	1640	1643	N15	E44	.750	15139	12.0	5	-B	4	C		89		H
MCMA	08	1640E		1654D	N14	E40	.703	15139	11.7	14D	-N		P	1640	80	1.1	EL
	08	1654	1658	NO FLARE PATROL													
	08	1703	1711	NO FLARE PATROL													
892 RAMY	08	1756	1759	1802	N15	E39	.697	15139	11.7	6	-B	3	C		29		Y5
893 RAMY	08	1906	1907	1910	N15	E38	.686	15139	11.6	4	-B	3	C		23		Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE FEB	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
894 RAMY	08	1946	1948	1950	N15	E38	.686	15139	11.7	4	-B	3	C		146			Y5
895 PALE	08	1958	2001	2020	N13	E41	.709	15139	11.9	22	-N	3	C		55		F	Y5
GRP65896	08	2002>9	2103+6 2243	2315	N26	W08	.550	15134	8.2	193	-F						F	
PALE	08	2002	2109	2315	N26	W10	.558	15134	8.1	193	-F	3	C		73		F	
CULG	08	2058	2103	2130	N28	W05	.571	15134	8.5	32	-N		C	2103	70	.8		
CULG	08	2238	2243	2255U	N27	W10	.571	15134	8.2	17D	-F		C	2243	120	1.4		
GRP65897	08	2114>9	2116 2300	2322	N13	E41	.709	15139	12.0	128	-N						FH	
PALE	08	2114	2116	2320	N13	E41	.709	15139	12.0	126	1B	3	C		290		F H	
CULG	08	2221	2224	2230	N12	E40	.693	15139	11.9	9	-F		C	2224	60	.8		
CULG	08	2255	2300	2310	N13	E40	.698	15139	12.0	15	-F		C	2300	100	1.4		
CULG	08	2314	2319	2324	N19	E44	.769	15139	12.3	10	-F		C	2319	30	.5		
GRP65898	08	2143+7	2150+2	2206	N19	W14	.484	15135	7.9	23	-F						F	
CULG	08	2143	2150	2211	N17	W13	.450	15135	7.9	28	-N		C	2150	80	.9	F	
PALE	08	2150	2152	2201	N21	W15	.518	15135	7.8	11	-F	3	C		34		F	
GRP65899	08	2325>9	0020 2503	0135	N15	E37	.676	15139	11.8	130	-N							
CULG	09	0045	0103	0125U	N15	E39	.698	15139	12.0	40D	1N		C	0103	170	2.4		
PALE	08	2325	2420	0135	N16	E36	.671	15139	11.7	130	-N	3	C		130		DE F	
900 CULG	09	0021	0035	0100	N27	W13	.585	15134	8.0	39	?1N		C	0035	250	3.0		Y5
901 CULG	09 IMP.1 NO	0255	0257 PALE1	0302	N13	E38	.676	15139	12.0	7	N		P	0257	160	2.1		Y5
902 CULG	09	0335	0343	0425	N15	E35	.654	15139	11.8	50	-N		C	0343	30	.4	UF	Y5
	09	0354	0400	NO FLARE PATROL														
903 CULG	09	0417E	0422U	0434D	N16	W15	.454	15135	8.1	17D	-N		P	0422	60	.8	F	Y5
GRP65904	09	0449	0450 0520	0547D	N13	E33	.618	15139	11.7	58	-N						F	
MANI	09	0449	0450	0517D	N14	E36	.659	15139	11.9	28D	-N	3	P		130	1.8	F	
CULG	09	0515E	0520U	0547U	N13	E31	.594	15139	11.5	32D	-F		P	0520	60	.8		
GRP65905	09	0504	0509 0518	0700	N26	W12	.567	15134	8.3	116	-B						F	
MANI	09	0504	0509	0528D	N27	W12	.581	15134	8.3	24D	-N	3	P		150	1.9	F	
CULG	09	0515E	0518	0700	N25	W12	.554	15134	8.3	105D	1B		C	0518	250	3.3	F	
GRP65906	09	0617	0622+2	0633	N13	E37	.664	15139	12.0	16	1N				170	2.3	U	
CULG	09	0617	0622U	0625D	N13	E36	.653	15139	12.0	8D	1N		P	0622	240	3.1		
MANI	09	0620E	0624	0630	N14	E37	.670	15139	12.0	10D	-N	3	P		140	2.0	F	
TACH	09	0622E	0623	0635	N13	E37	.664	15139	12.0	13D	-N		C	0622	115	1.4	BEU	
907 ABST	09	0706E	0707	0716	N28	W12	.594	15134	8.4	10D	-F		P	0707	79	1.0	D	Y5
908 CULG	09	0805	0807	0815	N16	E37	.682	15139	12.1	10	-F		C	0807	20	.3		Y5
909 CULG	09	0807	0809	0819D	N27	W13	.585	15134	8.4	12D	-N		C	0809	90	1.1		Y5
910 MONT	09	0917	0919	0922	N15	E33	.631	15139	11.9	5	-F		C	0919	50		E	Y5
911 MONT	09	0947	0951	0953	N17	E25	.561	15139	11.3	6	-F		C	0951	20			Y5
912 MONT	09	0949	0950	1000	N15	E33	.631	15139	11.9	11	-F		C	0950	50		E	Y5
GRP65913	09	1028+1	1031+1	1043	S29	E58	.857	15142	13.8	15	-N				70	1.4	G	
MONT	09	1028	1032	1043	S29	E59	.864	15142	13.9	15	-N		C	1032	80		G	
ZURI	09	1029	1031	1043	S29	E58	.857	15142	13.8	14	-N		C	1031	70	1.4		
914 MONT	09	1111	1118	1214	N28	W14	.603	15134	8.4	63	1N		C	1118	250			Y5
GRP65915	09	1151	1159+1	1206	N13	E33	.618	15139	12.0	15	2B				550	6.9	HX	
MONT	09	1151	1159	1206	N14	E35	.647	15139	12.1	15	2B		C	1159	600		XH	
CATA	09	1155E	1200	1200D	N12	E32	.599	15139	11.9	5D	2B	2	P	1200	505	6.5		
916 MONT	09	1222	1226	1230D	N15	E30	.598	15139	11.8	8D	-N		C	1226	80		E	Y5
917 MCHA	09	1400E	1405	1435D	N15	E29	.587	15139	11.8	35D	-B		C	1405	100	1.3	EHL	Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	
918 MCMA	09	1432	1435	1443	N26	W16	.588	15134	8.4	11	-N		C	1435	50	.7	E Y5
919 MCMA	09	1436	1451	1825D	N15	E29	.587	15139	11.8	229D	1B		C	1451	220	2.8	EHKLUY Y5
920 MCMA	09	1454	1457	1503	N18	W10	.445	15135	8.9	9	-N		C	1457	50	.6	E Y5
921 MCMA	09	1511	1513	1519	N21	W14	.512	15135	8.6	8	-F		C	1513	25	.3	D Y5
922 MCMA	09	1613	1617	1620	N18	W11	.451	15135	8.9	7	-F		C	1617	30	.3	E Y5
923 MCMA	09	1739E		1745	N15	W12	.416	15135	8.8	6D	-F		C	1739	25	.3	E Y5
924 MCMA	09	1823	1824	1831D	N21	W16	.525	15135	8.6	8D	-N		C	1824	30	.3	E Y5
925 MCMA	09 IMP.1 NO	1825	1831 PALE1	1920	N15	E28	.575	15139	11.9	55	?B	*	C	1831	160	2.0	EHY Y5
926 MCMA	09	1857E		1907	S29	W26	.549	15132	7.8	10D	-F		P	1857	30	.4	E Y5
927 MCMA	09	1926	1930	1954	N28	W18	.625	15134	8.5	28	-B		C	1930	125	1.7	E Y5
928 CULG	09	2026E	2026U	2050U	N12	E21	.468	15139	11.4	24D	-F		P	2026	30	.3	Y5
929 CULG	09	2059	2103	2112	N20	W18	.528	15135	8.5	13	-F		C	2103	55	.7	F Y5
930 CULG	09	2103	2115	2127U	N15	E25	.542	15139	11.8	24D	-N		C	2115	60	.8	FKJ Y5
GRP65931	09	2155	2214 2256+1	0011D	N13	E25	.524	15139	11.8	136	1N				390	4.6	FU
CULG	09	2155	2214	2244U	N12	E21	.468	15139	11.5	49D	-B		C	2214	110	1.3	F
CULG	09	2231	2257	0011D	N15	E25	.542	15139	11.8	100D	1B		C	2257	430	5.2	FU
MANI	09	2256E	2256U	2307D	N14	E27	.556	15139	12.0	11D	1F	2	P		350	4.4	FE
932 CULG	09	2253	2317	2343	N27	W20	.626	15134	8.5	50	-N		C	2317	70	.9	F Y5
933 CULG	09	2359	2421	0109	N16	W27	.573	15135	8.0	70	-N		C	0021	110	1.4	UF Y5
GRP65934	10	0014+5	0023+3	0104	N13	E22	.490	15139	11.7	50	1B				240	2.7	F
CULG	10	0014	0023	0112	N12	E21	.469	15139	11.6	58	-B		C	0023	160	1.8	F
MANI	10	0019	0026	0055	N14	E23	.511	15139	11.7	36	1B	3	P		320	3.9	FE
GRP65935	10	0211+6	0214 0221	0240	N13	E21	.479	15139	11.7	29	-N						F
CULG	10	0211	0214	0225D	N12	E18	.435	15139	11.4	14D	-N		P	0214	110	1.2	F
MANI	10	0217	0221	0240	N14	E25	.533	15139	12.0	23	1N	3	P		200	2.4	F
936 CULG	10	0339	0430	0445	N25	W24	.633	15134	8.4	66	-F		C	0430	20	.3	K Y5
937 CULG	10	0408	0425U	0435	N13	E20	.468	15139	11.7	27	-F		P	0425	80	.9	F Y5
GRP65938	10	0508>9	0525+5	0557	N13	E21	.479	15139	11.8	49	-F				60	.7	F
CULG	10	0508	0530	0600	N13	E20	.468	15139	11.7	52	-F		C	0530	70	.8	F
MANI	10	0522	0525	0554	N14	E22	.500	15139	11.9	32	-F	3	P		60	.7	F
GRP65939	10	0659+1	0702+0 0715	0733	N12	E15	.404	15139	11.4	34	1N				190	2.1	E
ATHN	10	0650E	0715	0745	N13	E19	.457	15139	11.7	55D	1N	1		0715	262	2.9	
MANI	10	0659	0702	0717	N12	E15	.404	15139	11.4	18	-N	3	P		150	1.7	
TACH	10	0700	0702	0733	N11	E14	.382	15139	11.3	33	1B		C	0702	239	2.6	CE
940 TACH	10	0755	0800	0811	N12	E23	.492	15139	12.1	16	1N		C	0800	212	2.5	CE Y5
941 ABST	10	1037E	1038	1105D	N26	W32	.707	15134	8.0	28D	-F		P	1038	87	1.3	DJ Y5
942 ABST	10	1055E	1058	1105D	N13	E22	.490	15139	12.1	10D	-F		P	1058	87	1.0	DJ Y5
	10	1155	1314	NO FLARE PATROL													
	10	1700	1716	NO FLARE PATROL													
943 MCMA	10	1716E	1739	1808D	N16	E16	.463	15139	11.9	52D	1B		C	1739	300	3.4	EKL Y5
	10	1808	1817	NO FLARE PATROL													
944 MCMA	10	1835E		1858D	N14	E08	.376	15139	11.4	23D	-N		C	1835	80	.9	E Y5
	10	1850	1856	NO FLARE PATROL													
	10	1858	1906	NO FLARE PATROL													

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
	FEB																	
945 MCMA	10	1906E	1911	2015D	N25	W35	.725	15134	8.2	69D	-F		P	1911	80	1.2	E	Y5
946 MCMA	10	1911	1934	2015D	N14	E08	.376	15139	11.4	64D	-N		C	1934	75	.9	EFK	Y5
	10	2018	2250	NO FLARE PATROL														
947 MANI	11	0110	0112	0140	N27	W40	.780	15134	8.0	30	-F	3	P		70	1.1		Y5
GRP65948	11	0203	0205+6	0221D	N14	E08	.376	15139	11.7	18	-N				70	.8	F	
MANI	11	0203	0205U	0221	N14	E05	.362	15139	11.5	18	-N	3	P		80	.9	F	
CULG	11	0208E	0211U	0255	N15	E11	.410	15139	11.9	47D	-N		P	0211	70	.8		
949 MANI	11	0205	0208	0218	N17	W25	.562	15135	9.2	13	-F	3	P		40	.5		Y5
GRP65950	11	0319+1	0320+4	0338	N14	E13	.412	15139	12.1	19	-N				70	.8	E	
VORC	11	0319	0320	0338	N16	E14	.447	15139	12.2	19	-B		C	0320	108	1.2	E	
MANI	11	0320	0324	0343	N13	E12	.390	15139	12.0	23	-N	3	P		70	.8		
CULG	11	0328E		0332	N12	E13	.386	15139	12.1	4D	-N		P	0328	40	.4		
GRP65951	11	0341	0347+3	0406	N18	E08	.436	15139	11.8	25	-N						E	
VORO	11	0341	0350	0400	N19	E08	.451	15139	11.8	19	-B		C	0350	170	1.9	E	
CULG	11	0347E	0347U	0412	N17	E08	.421	15139	11.8	25D	-F		P	0347	50	.6		
952 CULG	11	0606	0615U	0716	N24	W40	.761	15134	8.3	70	-F		C	0615	60	.9	FKT	Y5
953 CULG	11	0703	0704	0710	N11	E00	.303	15139	11.3	7	-N		C	0704	20	.2		Y5
GRP65954	11	0731>9	0755+0 0818	0832	N11	E10	.346	15139	12.1	61	1N				220	2.3	K	
CULG	11	0731	0755	0823D	N11	E10	.346	15139	12.1	52D	1N		P	0755	290	3.2	K	
MANI	11	0753	0755	0806	N13	E11	.382	15139	12.2	13	-N	3	P		160	1.8		
MANI	11	0815	0818	0832	N12	E11	.368	15139	12.2	17	-N	3	P		120	1.3		
GRP65955	11	1407+1	1409+1	1415	N14	W08	.376	15139	11.0	8	-N						EH	
MCMA	11	1407	1409	1415	N15	W08	.391	15139	11.0	8	-F		C	1409	60	.7	EH	
CATA	11	1408	1410	1415	N14	W09	.382	15139	10.9	7	-B	2	C	1410	140	1.5	H	
GRP65956	11	1425+4	1428+1	1443	N14	E06	.366	15139	12.1	18	1B				210	2.2	EL	
MCMA	11	1425	1428	1448	N14	E07	.371	15139	12.1	23	1B		C	1428	200	2.2	EL	
CATA	11	1429	1429	1436	N14	E06	.366	15139	12.1	9	1B	2	C	1429	224	2.4		
	11	1555	1635	NO FLARE PATROL														
957 MCMA	11	1701	1705	1750	N13	W05	.346	15139	11.3	49	-N		C	1705	100	1.1	EL	Y5
958 MCMA	11	1815E	1820	1828D	N15	W10	.403	15139	11.0	13D	-N		C	1820	40	.5	EL	Y5
	11	1828	1846	NO FLARE PATROL														
959 MCMA	11	1846E		1848	N18	W08	.436	15139	11.2	2D	-N		C	1846	25	.3	EL	Y5
	11	1907	1915	NO FLARE PATROL														
960 MCMA	11	1940		2019D	N14	W07	.371	15139	11.3	39D	-N		C	1950	150	1.6	E	Y5
961 MCMA	11	1942	1952	2019D	N28	W43	.809	15134	8.6	37D	-N		C	1952	40	.7	E	Y5
	11	2019	2039	NO FLARE PATROL														
962 CULG	11	2035E		2115	N26	W45	.814	15134	8.5	40D	1F		P	2035	140	2.7	B	Y5
GRP65963	11	2035E	2050 2058	2118	N13	W08	.361	15139	11.3	43	-N						F	
CULG	11	2035E	2050	2118	N12	W08	.346	15139	11.3	43D	-N	*	P	2050	100	1.1	F	
CULG	11	2055	2058	2110	N15	W09	.397	15139	11.2	15	-N	*	P	2058	40	.4		
964 CULG	11	2115	2121	2135	N25	W48	.833	15134	8.3	20	-F		C	2121	80	1.4		Y5
965 CULG	11	2120	2141	2210	N11	W01	.303	15139	11.8	50	1N		C	2141	200	2.1		Y5
966 CULG	11	2205	2213	2218	N14	W13	.412	15139	10.9	13	-N		C	2213	120	1.3		Y5
	11	2234	2243	NO FLARE PATROL														
967 CULG	11	2258	2306	2315	N16	W11	.424	15139	11.1	17	-N		C	2302	30	.3		Y5
968 CULG	11	2305	2310	2327	N25	W48	.833	15134	8.4	22	-F		C	2310	50	1.0		Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	FEB																
969 CULG	11	2317	2319	2324	N14	E02	.354	15139	12.1	7	-N		C	2319	30	.3	Y5
GRP65970	11	2333+1	2338	2344	N17	W11	.439	15139	11.2	11	-F				40	.4	E
CULG	11	2333	2338	2345	N16	W11	.424	15139	11.2	12	-F		C	2338	30	.3	
VORO	11	2334		2342	N18	W11	.453	15139	11.2	8	-N		C	2335	54	.6	E
GRP65971	11	2341+0	2350+3 2405	0053	N13	W08	.361	15139	11.4	72	1N				250	2.7	FJK
VORO	11	2341	2353	0053	N13	W08	.361	15139	11.4	72	1N		C	2353	197	2.1	EJ
CULG	11	2341	2405	0101	N12	W08	.346	15139	11.4	80	1N		C	2405	190	2.1	FK
HANI	11	2350E	2350U	0019	N13	W07	.356	15139	11.5	290	1B	3	P		300	3.3	F
GRP65972	12	0002E	0002	0030	N18	00	.418	15139	12.0	28	-F						
HANI	12	0002E	0002U	0030	N18	E00	.418	15139	12.0	28D	-F	3	P		80	.9	
GRP65973	12	0046	0048	0054	N18	E02	.419	15139	12.2	8	-N						E
VORO	12	0046	0048	0054	N18	E02	.419	15139	12.2	8	-N		C	0048	90	.9	E
GRP65974	12	0131+7	0139+5	0150	N17	W12	.446	15139	11.2	19	-N				150	1.7	EH
CULG	12	0131	0139	0150	N16	W13	.440	15139	11.1	19	1N		C	0139	200	2.3	T
VORO	12	0136	0139	0147	N18	W12	.460	15139	11.2	11	-B		C	0139	99	1.1	EH
HANI	12	0138	0144	0150	N18	W11	.453	15139	11.2	12	-F	3	P		150	1.7	
GRP65975	12	0155+2	0159 0206+0	0216	N14	W15	.430	15139	11.0	21	-B				170	1.9	EH
CULG	12	0155	0206	0219	N13	W15	.418	15139	11.0	24	1N		C	0206	180	2.0	T
VORO	12	0157	0159	0203	N15	W15	.443	15139	11.0	6	-B		C	0159	108	1.2	E
VORO	12	0205	0206	0213	N16	W15	.456	15139	11.0	8	-B		C	0206	161	1.8	H
GRP65976	12	0241+0	0246+0 0254	0304	N14	W01	.354	15139	12.0	23	-N				150	1.6	EJK
CULG	12	0241	0246	0300	N13	E01	.337	15139	12.2	19	-F		C	0246	110	1.2	KJT
VORO	12	0241	0246	0259	N19	E01	.434	15139	12.2	18	1N		C	0246	188	2.0	E
VORO	12	0249	0254	0307	N13	W09	.368	15139	11.4	18	-B		C	0254	99	1.0	E
GRP65977	12	0312+1	0317+0	0330	N26	W54	.881	15134	8.1	18	1N				120	2.4	DJ
CULG	12	0312	0317	0336	N25	W54	.877	15134	8.1	24	1N		C	0317	150	3.3	T
VORO	12	0313	0317	0324	N27	W55	.891	15134	8.0	11	1B		C	0317	99	2.1	DJ
GRP65978	12	0318+2	0321+0	0329	N12	W07	.341	15139	11.6	11	-N						EH
CULG	12	0318	0321	0330	N11	W02	.306	15139	12.0	12	-N		C	0221	70	.7	T
VORO	12	0320	0321	0327	N13	W12	.391	15139	11.2	7	-B		C	0321	108	1.1	EH
GRP65979	12	0334>9	0336 0346+2	0355	N16	W13	.440	15139	11.2	21	-N				60	.7	EHJ
VORO	12	0334	0336	0350	N13	W12	.391	15139	11.2	16	-B		C	0336	143	1.5	EJ
CULG	12	0344	0346	0357	N17	W14	.461	15139	11.1	13	-N		C	0346	40	.4	T
VORO	12	0345	0348	0352	N18	W14	.474	15139	11.1	7	-N		C	0348	81	.9	EH
980 VORO	12	0402	0404	0408	N15	W01	.370	15139	12.1	6	-B		C	0404	63	.6	E Y5
GRP65981	12	0407+4	0416+1	0428	N17	W14	.461	15139	11.1	21	-N				60	.7	EH
CULG	12	0407	0416	0432	N16	W14	.447	15139	11.1	25	-N		C	0416	70	.8	T
VORO	12	0411	0417	0424	N18	W14	.474	15139	11.1	13	-B		C	0417	63	.7	EH
982 CULG	12	0416	0424	0450	N26	W50	.852	15134	8.4	34	-N		C	0424	40	.8	T Y5
983 CULG	12	0519	0521	0532	N25	W55	.884	15134	8.1	13	-F		C	0521	40	.9	T Y5
984 CULG	12	0522	0523	0532	N14	W01	.354	15139	12.1	10	-N		C	0523	35	.4	T Y5
985 CULG	12	0528	0533	0550	S30	E30	.596	15142	14.5	22	-F		C	0533	50	.6	Y5
GRP65986	12	0607+3	0616 0635	0704	N15	W15	.443	15139	11.1	57	-F						FJK
ABST	12	0607	0646	0716	N14	W15	.430	15139	11.1	69	-F		C	0646	175	2.0	FJK
CULG	12	0610	0616	0637	N15	W05	.378	15139	11.9	27	-F		C	0616	40	.4	FT
CULG	12	0631	0635	0651	N17	W16	.477	15139	11.1	20	-F		C	0635	20	.2	T
987 CULG	12	0614	0620	0630	N25	W51	.856	15134	8.4	16	-F		C	0620	50	1.0	T Y5
988 CULG	12	0658	0658U	0709D	N25	W55	.884	15134	8.2	11D	-F		P	0658	30	.7	T Y5
989 ABST	12	0742	0816 0816	0838	N16	W10	.419	15139	11.6	56	-F		C	0816	70	.8	DJK Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPORT-ANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	12	0858	0904	NO FLARE PATROL														
990 ABST	12	0804	0808	0838	N19	W14	.487	15139	11.3	34	-F		C	0808	87	1.0	DJ	Y5
GRP65991	12	0943	0944	0946	N17	W13	.453	15139	11.4	3	-F						DV	
ABST	12	0937	0941	0957	N13	W12	.391	15139	11.5	20	-N		C	0941	87	1.0	EJZ	
ABST	12	0937	0941	1000	N12	W06	.336	15139	12.0	23	1N		C	0941	306	3.4	EJ	
992 ABST	12	0943	0944	0946	N17	W13	.453	15139	11.4	3	-F		C	0944	96	1.1	DV	Y5
	12	1014	1024	NO FLARE PATROL														
993 ABST	12	1007E	1011	1013D	N17	W54	.852	15135	8.4	6D	-F		P	1011	87	2.0	FJ	Y5
994 ABST	12	1030E	1201 1033	1100D	N13	W12	.391	15139	11.5	30D	-N		P	1033	96	1.1	EJKZ	Y5
GRP65995	12	1307	1310	1347	N14	W05	.363	15139	12.2	40	1N						EK	
HTPR	12	1103	1105	1205	N13	W19	.458	15139	11.0	62	-B		C	1105	120	1.2		
CATA	12	1105E	1105	1105D	N11	W17	.414	15139	11.2		1B	2	P	1105	196	2.2		
ABST	12	1113E	1113	1128D	N13	W17	.437	15139	11.2	15D	1N		P	1113	261	2.9	BE	
HTPR	12	1153	1201	1205	N15	W22	.511	15139	10.8	12	-F		C	1201	20	.2		
GRP65996	12	1405E		1430D	N28	W53	.881	15139	8.6	25	-F						E	
HTPR	12	1307	1310	1346	N14	W04	.359	15139	12.2	39	1N		C	1310	320	3.2	EK	
MCMA	12	1332E		1348	N14	W05	.363	15139	12.2	16D	-N		C	1332	100	1.1	E	
997 MCMA	12	1405E		1430D	N28	W53	.881	15134	8.6	25D	-F		C	1411	50	1.2	E	Y5
998 MCMA	12	1520E		1600D	N14	W15	.430	15139	11.5	40D	-F		C	1525	120	1.4	E	Y5
	12	1618	1642	NO FLARE PATROL														
	12	1653	1726	NO FLARE PATROL														
	12	1736	1755	NO FLARE PATROL														
	12	1807	1823	NO FLARE PATROL														
999 MCMA	12	1603	1611	1618D	N14	W15	.430	15139	11.5	15D	-N		C	1611	100	1.2	E	Y5
	12	1837	1845	NO FLARE PATROL														
0 MCMA	12	1830E		1837D	N14	W08	.377	15139	12.2	7D	-N		C	1832	50	.6	E	Y5
	12	1902	2043	NO FLARE PATROL														
1 MCMA	12	1846	1853	1902D	N13	W17	.437	15139	11.5	16D	1B		C	1853	175	2.0	EKL	Y5
	12	2118	2124	NO FLARE PATROL														
2 CULG	12	2036E	2040U	2052	N13	W25	.525	15139	11.0	16D	-N		P	2040	40	.5		Y5
3 CULG	12	2241	2253	2311	N14	W28	.568	15139	10.8	30	1N		C	2253	240	2.9		Y5
4 CULG	12	2338	0218 2345	0009	N27	W69	.964	15134	7.8	31	-N		C	2345	20			Y5
GRP66005	13	0316	0320	0330	N27	W69	.965	15139	8.0	14	-F							
CULG	13	0115	0218	0520	N13	W07	.357	15139	12.5	245	2N		C	0218	550	6.1	F	
MITK	13	0129	0159	0254D	N18	W16	.490	15139	11.9	85D	1N		C	0159	260	3.1	FI	
MITK	13	0131	0156	0254D	N14	W23	.513	15139	11.3	83D	1N		C	0156	220	2.6	FIZ	
MANI	13	0139	0151	0400	N13	W24	.514	15139	11.3	141	1B	3	P		200	2.4		
MANI	13	0140	0150	0400	N19	W14	.488	15139	12.0	140	1B	3	P		280	3.3		
MANI	13	0140	0143	0400	N19	W14	.488	15139	12.0	140	-F	3	P		100	1.2		
KODA	13	0146	0239	0355	N16	W21	.512	15139	11.5	129	2N		P				EHK	
MITK	13	0251		0254D	N12	W21	.470	15139	11.5	3D	-N		P	0254	120	1.4	I	
CULG	13	0340	0358	0414	N14	W31	.603	15139	10.8	34	-F		C	0358	120	1.5	H	
6 CULG	13	0316	0320	0330	N27	W69	.965	15134	8.0	14	-F		C	0320	15			Y5
GRP66007	13	0430E		0526	N18	W16	.490	15139	12.0	56	1N						FI	
CULG	13	0406	0413	0433	N12	W29	.565	15139	11.0	27	-N	*	C	0413	70	.8	V	
MANI	13	0408	0414	0422	N13	W32	.608	15139	10.8	14	-N	*	P		120	1.6		
8 MITK	13	0430E		0526	N18	W16	.490	15139	12.0	56D	1N		C	0430	350	4.1	FI	Y5
GRP66009	13	0449	0454	0505	N23	E78	.990	15139	19.1	16	-F							
MITK	13	0436	0446	0452	N13	W29	.572	15139	11.0	16	-N	*	C	0446	50	.6	EHI	
CULG	13	0437	0447U	0458	N14	W30	.592	15139	10.9	21	-N	*	C	0447	60	.8		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
10 CULG	13	0449	0454U	0505	N23	E78	.990	15152	19.1	16	-F		C	0454	20			Y5
	13	0727	0732	NO FLARE PATROL														
11 MITK	13	0551	0601	0630	N12	W23	.493	15139	11.5	39	-N		C	0601	60	.7	EI	Y5
GRP66012	13	0836	0837 0840	0840D	N11	W28	.545	15139	11.3	4	-F							
HTPR	13	0818E	0819	0849	N14	W07	.372	15139	12.8	31D	-N		C	0819	120	1.2	EK	
MANI	13	0822E	0824	0836	N14	W14	.422	15139	12.3	14D	-N	3	P		180	2.1	F	
KANZ	13	0823E		0832D	N14	W16	.440	15139	12.1	9D	-N							
GRP66013	13	0858	0859	0902	N14	W31	.603	15139	11.0	4	-N							
MANI	13	0836	0837	0840D	N08	W25	.484	15139	11.5	4D	-F	3	P		40	.5		
MANI	13	0836E	0840	0840D	N14	W31	.603	15139	11.0	4D	-F	3	P		80	1.0		
14 HTPR	13	0858	0859	0902	N14	W31	.603	15139	11.0	4	-N		C	0859	20	.2		Y5
15 HTPR	13	0948	0950	1002	N14	W31	.603	15139	11.1	14	-F		C	0950	10	.1		Y5
16 HTPR	13 IMP.1 NO	1036	1037 HTPR2	1045 KANZ2	N10	W27	.525	15139	11.4	9	-B		C	1037	50	.6	E	Y5
17 ZURI	13	1323E	1325	1343	N30	E90	1.002	15153	20.3	20D	?N		P	1325	100			Y5
GRP66018	13	1415+0	1418+1	1430	N15	W31	.611	15139	11.3	15	-F						E	
ZURI	13	1325	1335	1341	N13	W19	.459	15139	12.1	16	-N		C	1335	180	2.1		
KANZ	13	1330	1334	1340	N14	W20	.480	15139	12.1	10	-F							
HTPR	13	1330	1333	1342	N12	W20	.459	15139	12.1	12	-N		C	1333	40	.4	E	
GRP66019	13	1439	1441	1447	N11	W28	.545	15139	11.5	8	-N							
ZURI	13	1415	1419	1421	N16	W36	.673	15139	10.9	6	1F		C	1419	290	4.0		
KANZ	13	1415	1418	1433	N15	W31	.611	15139	11.3	18	-F		C					
HTPR	13	1415	1418	1430	N15	W25	.544	15139	11.7	15	-F		C	1418	70		E	
20 ZURI	13	1439	1441	1447	N11	W28	.545	15139	11.5	8	-N		C	1441	60	.8		Y5
	13	1527	1532	NO FLARE PATROL														
	13	1533	1535	NO FLARE PATROL														
GRP66021	13	1551	1553	1553D	N13	W27	.549	15139	11.6	2	1N							
ZURI	13	1451	1455	1459	N16	W36	.673	15139	10.9	8	1N		C	1455	200	2.8		
HTPR	13	1451E		1456D	N16	W39	.705	15139	10.7	5D	-F		C	1454	20	.2		
HTPR	13	1451E		1456D	N11	W28	.545	15139	11.5	5D	-F		C	1454	20	.2		
	13	1553	2054	NO FLARE PATROL														
22 ZURI	13	1551	2141 1553	1553D	N13	W27	.549	15139	11.6	2D	1N		P	1553	220	2.8		Y5
	13	2149	2232	NO FLARE PATROL														
GRP66023	13	2237	2241	2257	N11	W39	.678	15139	11.0	20	-N							
CULG	13	2125	2131	2145	N14	W40	.704	15139	10.9	20	-F		C	2131	80	1.1		
CULG	13	2130	2141	2150D	N11	W39	.678	15139	11.0	20D	-N		C	2141	20	.3		
24 CULG	13	2237	2331+2 2241	2257	N11	W39	.678	15139	11.0	20	-N		C	2241	30	.4		Y5
GRP66025	14	0027+1	0029+0	0031	N14	W31	.604	15139	11.7	4	-N				35	.4	D	
CULG	13	2318	2333	2353	N13	W35	.642	15139	11.3	35	-N		C	2333	120	1.5	F	
VORO	13	2322	2326	2347	N12	W34	.625	15139	11.4	25	-B		C	2326	108	1.3	EH	
MANI	13	2325E	2325U	2340D	N13	W32	.608	15139	11.6	15D	-N	3	V		60	.8	F	
VORO	13	2327	2332	2342	N18	W36	.686	15139	11.3	15	1B		C	2332	170	2.3	EJ	
MANI	13	2330E	2331	2338D	N18	W37	.696	15139	11.2	8D	-N	3	V		50	.7		
GRP66026	14	0112	0116	0123	N15	W41	.721	15139	11.0	11	-F							
CULG	14	0027	0029U	0029D	N14	W31	.604	15139	11.7	2D	-N		C	0029	20	.2		
VORO	14	0028	0029	0031	N15	W32	.622	15139	11.6	3	-B		C	0029	45	.5	D	
27 CULG	14	0112	0116	0123	N15	W41	.721	15139	11.0	11	-F		C	0116	20	.2	T	Y5
28 CULG	14	0144	0146	0150	N30	W80	.996	15134	8.1	6	-N		C	0146	30			Y5
GRP66029	14	0251	0320	0333	N12	W42	.717	15139	11.0	42	-F							
CULG	14	0215	0233	0245	N18	W38	.706	15139	11.2	30	-F		C	0233	40	.5		
VORO	14	0225	0229	0238	N17	W38	.700	15139	11.3	13	-B		C	0229	54	.7	D	

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONG.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	FEB																	
30 CULG	14	0251	0320	0333	N12	W42	.717	15139	11.0	42	-F		C	0320	30	.4	T	Y5
31 CULG	14	0401	0406	0414	N16	W41	.726	15139	11.1	13	-F		C	0406	30	.4	T	Y5
	14	0524	0530	NO FLARE PATROL														
32 CULG	14	0427	0500	0509	N18	W38	.706	15139	11.3	42	-F		C	0500	50	.7	T	Y5
GRP66033	14	0615E	0616	0625D	N16	W31	.619	15139	11.9	10	-F						DJ	
ABST	14	0615E	0620	0625D	N11	W44	.734	15139	11.0	10D	1N		P	0620	140	2.1	DJ	
CULG	14	0616	0621	0632D	N13	W43	.732	15139	11.0	16D	-N		C	0621	70	1.0	T	
	14	0641	0644	NO FLARE PATROL														
34 ABST	14	0615E	0616	0625D	N16	W31	.619	15139	11.9	10D	-F		P	0616	70	.9	DJ	Y5
GRP66035	14	0706+2	0709+1	0740	N27	E69	.965	15139	19.5	34	-N				60		D	
CULG	14	0656	0702	0713D	N12	W42	.717	15139	11.1	17D	1N		C	0702	160	2.2	TV	
ABST	14	0701E	0703	0711	N12	W43	.728	15139	11.1	10D	1B		P	0703	175	2.6	DJ	
GRP66036	14	1109+6	1112+1 1120	1155	N11	W42	.712	15153	11.3	46	-N				140	2.0	EK	
ABST	14	0706E	0709	0740	N28	E70	.970	15153	19.5	34D	1F		P	0709	87		D	
CULG	14	0708	0710U	0715D	N27	E69	.965	15153	19.5	7D	-N		C	0710	40			
GRP66037	14	1225+0	1230+0	1237	N14	W47	.778	15139	11.0	12	-N							
ZURI	14	1109	1113	1123D	N11	W40	.690	15139	11.5	14D	-N		P	1113	150	2.2		
HTPR	14	1110	1112	1140	N12	W41	.706	15139	11.4	30	-N		C	1112	140	1.8	EK	
CATA	14	1115	1120	1145	N10	W40	.685	15139	11.5	30	-N	2	C	1120	112	1.5		
HTPR	14	1124	1127	1150	N11	W46	.756	15139	11.0	26	-N		C	1127	20	.3		
HTPR	14	1124	1127	1143	N14	W47	.778	15139	11.0	19	-N		C	1127	20	.3		
CATA	14	1130	1135	1200	N09	W46	.749	15139	11.0	30	-E	2	C	1135	56	.8		
GRP66038	14	1420+1	1428 1435+2	1441	N17	W44	.761	15139	11.3	21	-N						H	
CATA	14	1225	1230	1240	N15	W48	.791	15139	10.9	15	-B	2	C	1230	56	.9		
HTPR	14	1225	1227	1232	N16	W51	.823	15139	10.7	7	-F		C	1227	10	.2		
HTPR	14	1228	1230	1233	N12	W43	.728	15139	11.3	5	-F		C	1230	20	.3		
GRP66039	14	1529+1	1530+2	1540	N27	E67	.956	15139	19.7	11	-N				40		E	
HCMA	14	1420	1436	1445	N17	W44	.761	15139	11.3	25	-N		C	1435	60	1.0	H	
HTPR	14	1421	1428	1442	N17	W45	.771	15139	11.2	21	-F		C	1428	10	.1		
CATA	14	1430E	1435	1435D	N16	W44	.756	15139	11.3	5D	-B	2	P	1435	112	1.7		
RAMY	14	1435	1437	1439	N16	W46	.776	15139	11.2	4	-B	3	C		32			
ZURI	14	1435E	1435	1439	N18	W43	.756	15139	11.4	4D	1N		P	1435	160	2.6		
GRP66040	14	1620+0	1623+0	1632	N13	W40	.699	15153	11.7	12	-B				30	.4	F	
HCMA	14	1529	1530	1540	N27	E68	.961	15153	19.7	11	-N		C	1530	30	1.2	E	
RAMY	14	1529	1532	1536	N27	E66	.952	15153	19.6	7	-B	3	C		28			
HTPR	14	1530	1532	1540	N28	E68	.962	15153	19.7	10	-N		C	1532	50	1.1	E	
GRP66041	14	1720	1722	1745	N12	W48	.780	15139	11.1	25	-N						E	
RAMY	14	1620	1623	1632	N13	W42	.721	15139	11.5	12	-B	3	C		28		F	
RAMY	14	1620	1623	1626D	N14	W39	.694	15139	11.8	6D	-B	3	V		28			
42 HCMA	14	1720	1807 1722	1745	N12	W48	.780	15139	11.1	25	-N		C	1722	100	1.7	E	Y5
	14	1755	1801	NO FLARE PATROL														
	14	1821	1837	NO FLARE PATROL														
GRP66043	14	1853	1909	1954	N15	W43	.742	15139	11.6	61	-N							
PALE	14	1754	1758	1823	N15	W42	.731	15139	11.6	29	-F	3	C		30		DE	
PALE	14	1754	1807	1823	N15	W42	.731	15139	11.6	29	-N	3	C		60		DE	
	14	1900	1906	NO FLARE PATROL														
	14	1937	1949	NO FLARE PATROL														
44 PALE	14	1853	1909	1954	N15	W43	.742	15139	11.6	61	-N	3	C		36		DE	Y5
	14	2014	2237	NO FLARE PATROL														
45 RAMY	14	2001	2004	2021	S32	E12	.463	15142	15.7	20	-N	3	C		41			Y5
46 RAMY	14	2046	2047	2055	N14	W42	.726	15139	11.7	9	-B	3	C		74			Y5
47 RAMY	14	2115	2117	2124	S30	W10	.423	15142	14.1	9	-N	3	C		34			Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE - FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	
	14	2247	2301	NO FLARE PATROL													
48 CULG	14	2237E	2237E	2305	N17	W53	.844	15139	11.0	28D	-F		P	2237	30	.6	Y5
49 CULG	14	2314	2320	2332	N12	W47	.770	15139	11.4	18	1N		C	2320	140	2.1	Y5
50 CULG	14	2320	2321	2332	N18	W80	.992	15135	9.0	12	-N		C	2321	40		Y5
51 CULG	15	0021E	0021E	0036	N14	W46	.768	15139	11.6	15D	-F		P	0021	20	.3	Y5
GRP66052	15	0400+0	0403+1	0426	N12	W55	.847	15139	11.0	26	1N						F
VORO	15	0301		0318	N12	W50	.800	15139	11.4	17	-B		P	0303	116	1.9	E
CULG	15	0304E	0306	0314	N11	W50	.797	15139	11.4	10D	-F		P	0306	40	.6	
	15	0430	0436	NO FLARE PATROL													
	15	0446	0451	NO FLARE PATROL													
GRP66053	15	0456	0501	0519	N16	W38	.695	15139	12.4	23	-F						
CULG	15	0400	0403	0427	N12	W56	.855	15139	11.0	27	1N		C	0403	190	3.8	F
VORO	15	0400	0404	0410D	N14	W56	.860	15139	11.0	10D	2F		P	0404	340	6.9	E
MANI	15	0405E	0405U	0424	N11	W52	.816	15139	11.3	19D	-N	3	V		80	1.4	F
54 CULG	15	0456	0755+6 0501	0519	N16	W38	.695	15139	12.4	23	-F		C	0501	20	.3	Y5
GRP66055	15	0906+6	0915+1	0932	N10	W54	.832	15139	11.3	26	-F				60	1.1	E
CULG	15	0718E	0725	0755D	N13	W50	.804	15139	11.6	37D	-N		P	0725	70	1.3	F
MANI	15	0720E	0720U	0725D	N14	W48	.788	15139	11.7	5D	-F	2	V		30	.5	
ATHN	15	0724E	0725	0740	N14	W52	.825	15139	11.4	16D	-N	1		0725	131	2.3	
BUCA	15	0738		0840	N17	W45	.771	15139	11.9	62	-F		C	0753	53	.9	E
BUCA	15	0746		0811	N15	W49	.801	15139	11.6	25	-N		C	0753	64	1.1	
HTPR	15	0748E		0808	N14	W52	.825	15139	11.4	20D	-N		C	0753	50	.6	E
HTPR	15	0748E		0830	N16	W47	.786	15139	11.8	42D	-N		C	0751	40	.4	E
CATA	15	0750	0755	0835	N14	W48	.788	15139	11.7	45	1B	2	C	0755	151	2.5	
MONT	15	0752E	0756	0845	N15	W47	.782	15139	11.8	53D	-N		C	0756	150		
MANI	15	0753E	0755	0845D	N15	W46	.772	15139	11.9	52D	-F	2	V		80	1.3	F
ATHN	15	0753	0755	0817D	N14	W52	.825	15139	11.4	24D	-N	1		0755	66	1.1	
ABST	15	0756E	0801	0900D	N18	W46	.785	15139	11.9	64D	1N		P	0801	149	2.6	BEJ
ABST	15	0756E	0801	0816	N15	W50	.810	15139	11.6	20D	-N		P	0801	105	1.7	BEJ
ATHN	15	0802E	0807	0830D	N17	W48	.800	15139	11.7	28D	-N	1		0807	82	1.3	
ZURI	15	0835E	0835	0850	N17	W46	.781	15139	11.9	15D	-N		P	0835	60	1.0	
GRP66056	15	0919+7	0923+5	0940	N27	E54	.885	15139	19.4	21	-F				50	1.1	J
MONT	15	0906	0915	0932	N11	W56	.853	15139	11.2	26	-N		C	0915	70		E
ZURI	15	0912	0916	0932	N10	W53	.823	15139	11.4	20	-F		C	0916	60	1.1	
GRP66057	15	1005+1	1012+3	1032	N33	E58	.926	15153	19.8	27	-N				60	1.4	E
HTPR	15	0919	0927	0937	N28	E55	.894	15153	19.5	18	-F		C	0927	20	.3	E
MONT	15	0923	0927	0941	N27	E53	.878	15153	19.4	18	-F		C	0927	40		D
ABST	15	0923E	0923	0931D	N34	E63	.952	15153	20.1	8D	-F		P	0923	70		EDJ
ZURI	15	0926	0928	0940	N27	E53	.878	15153	19.4	14	-B		C	0928	80	1.8	
GRP66058	15	1048	1051	1107	N14	W52	.825	15153	11.5	19	-N						
MONT	15	1005	1012	1032	N34	E60	.939	15153	19.9	27	-N		C	1012	60		E
ZURI	15	1006	1012	1034	N33	E60	.936	15153	19.9	28	1B		C	1012	120		
HTPR	15	1006		1020D	N33	E56	.916	15153	19.6	14D	-F		C	1010	20	.3	E
TEHR	15	1012E	1015	1032	N27	E55	.891	15153	19.6	20D	-B	2	C		63		
GRP66059	15	1110+2	1112+1	1121	N17	W41	.731	15139	12.4	11	-N				60	.9	U
MONT	15	1048	1051	1108	N15	W52	.829	15139	11.6	20	-N		C	1051	100		EF
KANZ	15	1056E		1105	N14	W52	.825	15139	11.6	9D	-F						
GRP66060	15	1114+1	1121+3	1134	N32	E57	.918	15139	19.7	20	-F						E
MONT	15	1110	1113	1120	N18	W41	.737	15139	12.4	10	-F		C	1113	60		E
KANZ	15	1110	1113	1121	N17	W41	.731	15139	12.4	11	-F						
ZURI	15	1112	1112	1120	N17	W40	.721	15139	12.5	8	-N		C	1112	70	1.1	
TEHR	15	1116E	1121	1126	N18	W42	.747	15139	12.3	10D	-B	2	C		95		U F
GRP66061	15	1115>9	1137+0	1147	N14	W57	.868	15153	11.2	32	-F						D
MONT	15	1114	1124	1134	N32	E58	.924	15153	19.8	20	-F		C	1124	60		E
KANZ	15	1115	1121	1134	N32	E56	.913	15153	19.7	19	-F						
GRP66062	15	1215	1215	1226	N19	W60	.902	15139	11.0	11	-F						
KANZ	15	1115	1137	1147	N13	W57	.866	15139	11.2	32	-N	*					
MONT	15	1129	1137	1146	N15	W57	.871	15139	11.2	17	-F	*	C	1137	20		D
63 KANZ	15	1215	1215	1226	N19	W60	.902	15139	11.0	11	-F						Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE FEB	START	MAX PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
GRP66064	15	1458	1458	1502	N32	E57	.918	15139	19.9	4	-B						
RAMY	15	1334	1343	1349	N14	W51	.816	15139	11.7	15	-B	3	C		18		
MONT	15	1345	1348	1404	N16	W51	.823	15139	11.7	19	-B		C	1348	80		E
KANZ	15	1346	1349	1432	N16	W52	.832	15139	11.7	46	-B						
ZURI	15	1348	1350	1400	N14	W56	.860	15139	11.4	12	-N		C	1350	100	2.1	
RAMY	15	1350E	1352	1423	N14	W51	.816	15139	11.8	33D	-B	3	C		57		
65 RAMY	15	1458	1458	1502	N32	E57	.918	15153	19.9	4	-B	3	C		30		Y5
GRP66066	15	1534+4	1537+2	1544	N33	E59	.931	15139	20.1	10	-N				30		E
KANZ	15	1502	1503	1509	N13	W57	.866	15139	11.4	7	-F						
ZURI	15	1504	1504	1508	N14	W56	.860	15139	11.4	4	-B		C	1504	100	2.1	
	15	1608	1708	NO FLARE PATROL													
GRP66067	15	1652	1656	1658	N32	E56	.913	15153	19.9	6	-B						
MCMA	15	1534	1539	1545	N34	E60	.939	15153	20.1	11	-F		C	1539	30	.8	E
RAMY	15	1534	1537	1542	N32	E56	.913	15153	19.8	8	-B	3	C		23		
ZURI	15	1538	1539	1539D	N33	E60	.936	15153	20.2	1D	1F		P	1539	100		
68 RAMY	15	1652	1656	1658	N32	E56	.913	15153	19.9	6	-B	3	C		15		DE Y5
69 MCMA	15	1710E		1723D	N15	W53	.837	15139	11.7	13D	-N		P	1715	35	.7	E Y5
	15	1852	2158	NO FLARE PATROL													
GRP66070	15	1858	1858	1913	N15	W56	.863	15153	11.6	15	-N						
PALE	15	1838	1841	1858	N31	E54	.898	15153	19.8	20	1B	3	C		183		DE
RAMY	15	1838	1841	1858	N32	E55	.908	15153	19.9	20	1B	3	C		173		DE H
MCMA	15	1843E		1852D	N34	E56	.919	15153	20.0	9D	1N		P	1843	110	2.6	EL
71 PALE	15	1858	1858	1913	N15	W56	.863	15139	11.6	15	-N	3	C		20		DE Y5
GRP66072	15	1939	1941	1944	N32	E54	.902	15142	19.9	5	-B						
PALE	15	1915	1916	1919	S32	W01	.426	15142	15.7	4	-F	3	C		22		DE
RAMY	15	1916	1916	1933	S33	E04	.445	15142	16.1	17	-F	4	C		21		H
73 RAMY	15	1939	1941	1944	N32	E54	.902	15153	19.9	5	-B	4	C		29		DE Y5
	15	2204	2211	NO FLARE PATROL													
	15	2213	2223	NO FLARE PATROL													
74 CULG	15	2159E	2202U	2213D	N14	W57	.868	15139	11.6	14D	-F		P	2202	30	.6	Y5
GRP66075	15	2223E	2223	2237	N11	W63	.908	15139	11.2	14	-F						
PALE	15	2217E	2237U	2253	N16	W49	.805	15139	12.3	36D	1B	3	C		184		DE
CULG	15	2223E	2223	2237	N11	W63	.908	15139	11.2	14D	-F		P	2223	30	.7	
CULG	15	2228	2233	2305	N16	W48	.796	15139	12.3	37	-B		C	2233	80	1.3	
GRP66076	15	2325+5	2332+8	0004	N15	W57	.871	15139	11.7	39	-N				70	1.4	EIJ
CULG	15	2325	2332	0010	N13	W59	.882	15139	11.6	45	-N		C	2332	50	1.0	
VORO	15	2329	2338	2356	N15	W57	.871	15139	11.7	27	-B		C	2338	90	1.8	EJ
MITK	15	2330E	2340	0003	N15	W57	.871	15139	11.7	33D	-F		C	2340	70	1.5	EI
PALE	15	2330	2333	0036	N15	W55	.855	15139	11.9	66	-N	3	C		80		FDE
MANI	15	2333E	2334	2358D	N15	W56	.863	15139	11.8	25D	-F	2	V		50	1.0	F
77 CULG	15	2352	2409	0028	S35	W04	.476	15142	15.7	36	-F		C	2409	30	.3	Y5
GRP66078	16	0015+1	0016+3 0028	0031	N13	W56	.858	15139	11.8	16	-B						H
VORO	16	0015	0016	0025	N12	W58	.872	15139	11.7	10	-B	*	C	0016	81	1.6	DH
CULG	16	0016	0019	0031	N13	W56	.858	15139	11.8	15	-B	*	C	0019	40	.8	
VORO	16	0027	0028	0030	N13	W60	.890	15139	11.5	3	-B	*	C	0028	45	.9	D
PALE	15	2330	2417	0036	N18	W55	.863	15139	11.9	66	-B	*	C		126		FDE
GRP66079	16	0139+0	0140+2	0154	N12	W59	.880	15139	11.6	15	-N						D
VORO	16	0139	0140	0149	N13	W60	.890	15139	11.6	10	-B		C	0140	63	1.3	D
CULG	16	0139	0142	0158	N12	W59	.880	15139	11.6	19	-N		C	0142	20	.4	
80 VORO	16	0203	0204	0207	N13	W60	.890	15139	11.6	4	-B		C	0204	27	.5	DJ Y5
GRP66081	16	0308+2	0309+4	0333	N16	W50	.814	15139	12.4	25	-N				50	.8	E
VORO	16	0308	0309	0319	N17	W51	.827	15139	12.3	11	-B		C	0309	72	1.2	E
CULG	16	0310	0313	0346	N15	W50	.811	15139	12.4	36	-F		C	0313	30	.5	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
GRP66082	16	0358+7	0413+0 0439	0452	N12	W69	.946	15139	11.0	54	1N				140			
CULG	16	0358	0413	0457	N12	W70	.952	15139	10.9	59	1F		C	0413	160			
VORO	16	0405	0413	0428	N12	W72	.961	15139	10.8	23	1N		C	0413	116			
VORO	16	0434	0439	0446	N15	W66	.933	15139	11.2	12	-B		C	0439	63		D	
83 CULG	16	0603	0617	0658	S30	W28	.574	15142	14.2	55	-N		O	0617	30	.4	FG	Y5
GRP66084	16	0607+3	0611+5 0637	0651	N17	W51	.827	15139	12.4	44	1B				150	2.6	EIU	
CULG	16	0607	0616	0700	N16	W51	.823	15139	12.4	53	1B		P	0616	150	2.7	U	
TACH	16	0609	0611	0653	N18	W48	.804	15139	12.7	44	1N		C	0611	194	3.7	U	
TACH	16	0609	0637	0653	N18	W48	.804	15139	12.7	44	1N		C					
MITK	16	0610	0613	0646D	N17	W52	.835	15139	12.4	36D	-B		C	0613	70	1.3	EI	
MANI	16	0622E	0622U	0641	N17	W52	.835	15139	12.4	19D	1N	2	V		250	4.5		
ATHN	16	0642E	0642	0655D	N18	W54	.855	15139	12.2	13D	-N	1		0642	66	1.2		
85 CULG	16	0720	0723	0737	N31	E49	.868	15153	20.0	17	-F		C	0723	20	.4		Y5
	16	0925	1025	NO FLARE PATROL														
	16	1200	1333	NO FLARE PATROL														
86 RAMY	16	1329	1330	1332	N33	E40	.820	15153	19.6	3	-B	3	C		26			Y5
	16	1337	1615	NO FLARE PATROL														
87 RAMY	16	1400	1413	1440D	N25	W30	.685	15155	14.3	40D	-B	3	C		43			Y5
88 RAMY	16	1404	1405	1408	N12	W63	.909	15139	11.9	4	-N	3	C		13			Y5
89 RAMY	16	1447	1450	1455	N33	E39	.813	15153	19.5	8	-N	3	C		18			Y5
90 RAMY	16	1453	1500	1502	N12	W63	.909	15139	11.9	9	-N	3	C		14			Y5
91 RAMY	16	1531	1532	1544	N25	W30	.685	15155	14.4	13	-B	3	C		22			Y5
92 RAMY	16	1617	1619	1627	N25	W31	.693	15155	14.4	10	-B	3	C		19			Y5
	16	1618	1714	NO FLARE PATROL														
93 MCMA	16	1714E		1745	N27	W30	.702	15155	14.5	31D	-F		P	1714	30	.4	E	Y5
	16	1752	2050	NO FLARE PATROL														
94 PALE	16	1802	1803	1810	S30	W34	.635	15142	14.2	8	-N	3	C		25		DE	Y5
95 PALE	16	1803	1804	1808	S24	W26	.504	15142	14.8	5	-N	3	C		25		DE	Y5
96 PALE	16	1822	1823	1828	N26	W25	.654	15155	14.9	6	-N	3	C		24		DE	Y5
97 PALE	16	1836	1838	1847	N26	W30	.694	15155	14.5	11	-N	3	C		49		DE	Y5
GRP66098	16	1911+1	1915+5	1941	N31	E37	.786	15153	19.6	30	-N				25	.4		
PALE	16	1911	1920	1941	N30	E38	.786	15153	19.6	30	-N	3	C		21		DE	
RAMY	16	1912	1915	1941	N33	E36	.794	15153	19.5	29	-N	4	C		33		FDE	
99 PALE	16	1921	1928	1936	N26	W30	.694	15155	14.6	15	-N	3	C		64		DE	Y5
GRP66100	16	1940+0	1940+2	1951	N25	W31	.693	15155	14.5	11	-B				60	.8		
RAMY	16	1940	1942	1951	N25	W33	.710	15155	14.3	11	-B	3	C		46		DE	
PALE	16	1940	1940	1951	N26	W30	.694	15155	14.6	11	-B	3	C		76		DE F	
101 RAMY	16	1947	1951	1953	N33	E36	.794	15153	19.5	6	-N	3	C		156		F	Y5
102 PALE	16	2011	2011	2017	N26	W30	.694	15155	14.6	6	-N	3	C		30		DE	Y5
103 PALE	16	2022	2022	2026	N26	W30	.694	15155	14.6	4	-N	3	C		24		DE	Y5
104 PALE	16	2027	2027U	2051D	N26	W31	.702	15155	14.5	24D	-N	3	C		20		DE	Y5
105 CULG	16	2058E	2107	2121	N26	W33	.718	15155	14.4	23D	-N		P	2107	60	.8	T	Y5
GRP66106	16	2117	2136 2152+2	2212	N15	W69	.950	15139	11.7	55	-N						F	
CULG	16	2117	2136	2212	N17	W60	.898	15139	12.4	55	1N		C	2136	90	2.0		
CULG	16	2149E	2154	2209	N17	W60	.898	15139	12.4	20D	-N		C	2154	50	1.1		
CULG	16	2149E	2152	2305	N13	W85	.998	15139	10.5	76D	1N		C	2152	90			
PALE	16	2152E	2153U	2156	N16	W71	.961	15139	11.6	4D	-N	3	C		25		F	

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	FEB																
GRP66107	16	2151	2155+6	2217	N26	W32	.710	15155	14.5	26	-F				40	.6	F
CULG	16	2151	2201	2217	N27	W33	.726	15155	14.4	26	-F		C	2201	40	.6	T
PALE	16	2154E	2155	2210D	N26	W31	.702	15155	14.6	16D	-N	3	C		35		F
108 CULG	16	2225	2228	2238	N15	W61	.901	15139	12.4	13	-F	*	C	2228	20	.4	Y5
GRP66109	16	2229+3	2234+3 2250	2304	N27	W33	.726	15155	14.5	35	-N						F
PALE	16	2229	2237U	2311D	N27	W33	.726	15155	14.5	42D	-N	3	C		135		F
PALE	16	2229	2250U	2311D	N27	W33	.726	15155	14.5	42D	-F	3	C		31		F
CULG	16	2232	2234	2256	N27	W33	.726	15155	14.5	24	-N		C	2234	60	.9	T
110 PALE	16	2342	2343	2347	N27	W33	.726	15155	14.5	5	-N	3	C		24		F Y5
111 CULG	16	2355	2427U	0115	N13	W86	.999	15139	10.5	80	-N		C	2427	30		Y5
112 PALE	17	0007	0008	0020	N27	W33	.726	15155	14.5	13	-N	3	C		43		F Y5
113 PALE	17	0022	0023	0036	N27	W33	.726	15155	14.5	14	-N	3	C		44		F Y5
GRP66114	17	0102>9	0110 0117+1	0131	N27	W35	.742	15155	14.4	29	-N				40	.6	H
CULG	17	0102	0118	0127	N27	W35	.742	15155	14.4	25	-N		C	0118	30	.5	
PALE	17	0109	0117	0159	N27	W34	.734	15155	14.5	50	-B	3	C		49		F
PALE	17	0109	0110	0129	N27	W34	.734	15155	14.5	20	-F	3	C		123		F
VORO	17	0116	0118	0131	N27	W37	.758	15155	14.3	15	-N		C	0118	45	.6	DH
GRP66115	17	0137+4	0142+2	0153	N12	W80	.990	15139	11.1	16	1B				250		H
CULG	17	0137	0144	0249	N12	W90	1.000	15139	10.3	72	2B		C	0144	230		
VORO	17	0139	0142	0149	N12	W85	.998	15139	10.7	10	1N		C	0142	224		H
PALE	17	0141	0143	0150	N10	W75	.973	15139	11.4	9	1B	3	C		206		FDE
MANI	17	0144E	0144U	0155	N12	W75	.974	15139	11.4	11D	2N	3	P		360	9.2	F
GRP66116	17	0244>9	0315+0	0325	N16	W65	.929	15139	12.2	41	2B				280		JKV
CULG	17	0244	0315	0410	N17	W64	.925	15139	12.3	86	2N		C	0315	200	5.0	V
VORO	17	0256	0315	0323	N16	W67	.941	15139	12.1	27	1B		C	0315	367		JK
MANI	17	0313E	0315	0325	N15	W65	.927	15139	12.3	12D	2B	3	V		280	5.9	
GRP66117	17	0252+1	0256+3	0310	N12	W87	1.000	15139	10.6	18	-N				50		DJ
CULG	17	0252	0259	0310	N13	W90	1.000	15139	10.4	18	-N		C	0259	40		
VORO	17	0253	0256	0309	N11	W85	.998	15139	10.7	16	-B		C	0256	72		DJ
GRP66118	17	0359+2	0402+0	0408	N26	W37	.751	15155	14.4	9	-N				25	.4	D
CULG	17	0359	0402	0410	N26	W36	.743	15155	14.5	11	-N		C	0402	20	.3	
VORO	17	0401	0402	0405	N27	W38	.766	15155	14.3	4	-B		C	0402	27	.4	D
GRP66119	17	0423>9	0432+3	0446	N12	W90	1.000	15139	10.4	23	-B				50		DJ
CULG	17	0423E	0432	0449	N12	W90	1.000	15139	10.4	26D	1N		C	0432	60		T
VORO	17	0433	0435	0443	N12	W90	1.000	15139	10.4	10	-B		C	0435	36		DJ
GRP66120	17	0449+2	0455+0	0507	N14	W81	.993	15139	11.1	18	-N				30		DJ
CULG	17	0449	0455	0517	N15	W85	.999	15139	10.8	28	-N		C	0455	30		T
VORO	17	0451	0455	0457	N13	W77	.982	15139	11.4	6	-N		C	0455	27		DJ
GRP66121	17	0516+8	0527+9	0555	N12	W89	1.000	15139	10.5	39	1N						I
CULG	17	0516	0531	0615	N12	W90	1.000	15139	10.5	59	1N		C	0531	160		T
MITK	17	0524	0536	0544	N12	W89	1.000	15139	10.6	20	1N		C	0536	70		I
MANI	17	0525E	0527	0555D	N12	W77	.981	15139	11.5	30D	2F	2	V		320	7.8	
GRP66122	17	0520+4	0526+5	0544	N16	W66	.935	15139	12.3	24	1N				230		E
CULG	17	0520	0527	0542	N18	W63	.920	15139	12.5	22	1N		C	0527	180	4.5	
TACH	17	0524	0531	0545	N14	W70	.954	15139	12.0	21	1N		C	0531	305		CE
MANI	17	0525E	0526	0539D	N15	W66	.933	15139	12.3	14D	1F	2	V		200	4.4	
123 CULG	17	0623	0628	0629D	N27	W38	.766	15155	14.4	6D	-F		C	0628	30	.8	T Y5
124 CULG	17	0650	0657	0710	N12	W90	1.000	15139	10.5	20	-F		C	0657	30		T Y5
125 CULG	17	0735	0736	0750D	N13	W90	1.000	15139	10.6	15D	-N		C	0736	30		T Y5
126 HTPR	17	0844	0851	0856	N27	W40	.782	15155	14.4	12	-F		C	0851	20	.2	E Y5
	17	0927	0933	NO FLARE PATROL													
127 HTPR	17	0944	0946	0955	N14	W73	.968	15139	11.9	11	-F		C	0946	10		Y5
	17	1210	1213	NO FLARE PATROL													

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	
	17	1228	1301	NO FLARE PATROL													
	17	1311	1317	NO FLARE PATROL													
GRP66128	17	1340+1	1343	1349D	N13	W73	.967	15139	12.1	9	-B				25		E
RAMY	17	1340E	1343U	1349D	N13	W71	.958	15139	12.2	9D	-B	3	C		25		
HTPR	17	1341		1342D	N14	W75	.975	15139	11.9	1D	-F		C	1342	20		E
	17	1342	1347	NO FLARE PATROL													
	17	1358	1415	NO FLARE PATROL													
129 RAMY	17	1400	1401	1406D	S32	W44	.743	15142	14.3	6D	-N	3	C		22		Y5
	17	1635	1654	NO FLARE PATROL													
	17	1731	1834	NO FLARE PATROL													
GRP66130	17	1758>9	1800 1826	1915	N24	W43	.789	15155	14.5	77	-N						F
PALE	17	1758	1800	1912	N25	W40	.770	15155	14.7	74	-N	3	C		65		F
RAMY	17	1813	1826	1918	N23	W47	.817	15155	14.2	65	-N	3	C		22		F
	17	1837	1945	NO FLARE PATROL													
131 RAMY	17	1921	1927	1946	N23	W47	.817	15155	14.3	25	-N	2	C		45		F Y5
	17	2014	2015	NO FLARE PATROL													
	17	2144	2151	NO FLARE PATROL													
132 PALE	17	2215E	2226U	2245D	N25	W44	.803	15155	14.6	30D	-N	3	C		75		DE Y5
133 CULG	17	2244	2255	2302	S30	W48	.772	15142	14.3	18	-F		C	2255	30	.5	G Y5
GRP66134	17	2303+0	2307+0	2311	N13	W90	1.000	15139	11.2	8	-B				40		
CULG	17	2303	2307	2311	N13	W90	1.000	15139	11.2	8	1N		C	2307	50		
VORO	17	2303	2307	2310	N14	W90	1.000	15139	11.2	7	-B		C	2307	27		
135 PALE	17	2317E	2321U	2338	N25	W44	.803	15155	14.7	21D	-N	3	C		58		DE Y5
136 CULG	17	2335	2343	2353	N14	W82	.994	15139	11.8	18	-F		C	2343	20		Y5
GRP66137	17	2340+5	2346+5	0010	N26	W46	.824	15155	14.5	30	-N				110	1.9	
CULG	17	2340	2351	0010	N27	W45	.821	15155	14.6	30	-N		C	2351	110	1.9	T
PALE	17	2344	2346U	0010	N25	W45	.811	15155	14.6	26	-N	3	C		99		DE F
VORO	17	2345	2351	0004	N27	W48	.843	15155	14.4	19	-B		C	2353	108	1.9	D
GRP66138	18	0036+4	0039+6	0055	N27	W47	.836	15155	14.5	19	-N				70	1.2	J
CULG	18	0036	0039	0058	N28	W47	.841	15155	14.5	22	-N		C	0039	50	.9	T
VORO	18	0037	0039	0045	N28	W47	.841	15155	14.5	8	-B		C	0039	90	1.6	DJ
HITK	18	0038	0040	0052	N28	W50	.862	15155	14.3	14	-N		C	0040	90	1.8	E
PALE	18	0040	0045U	0059	N25	W45	.811	15155	14.7	19	-N	3	C		63		DE F
139 CULG	18	0044	0047	0056	N13	W90	1.000	15139	11.3	12	-N		C	0047	20		Y5
GRP66140	18	0144+2	0149+1	0200	N28	W46	.834	15155	14.6	16	-N				80	1.4	EJ
CULG	18	0144	0150	0205	N28	W47	.841	15155	14.5	21	-F		C	0150	60	1.1	J
VORO	18	0146	0149	0154	N28	W46	.834	15155	14.6	8	-B		C	0149	108	1.9	EJ
GRP66141	18	0207+0	0207+1	0217	N13	W90	1.000	15139	11.3	10	-B				35		EHJ
VORO	18	0207	0208	0216	N14	W90	1.000	15139	11.3	9	-B		C	0208	54		EHJ
CULG	18	0207	0207	0218	N13	W90	1.000	15139	11.3	11	-B		C	0207	20		
142 PALE	18	0211	0216	0219	N25	W46	.819	15155	14.6	8	-N	3	C		31		DE F Y5
GRP66143	18	0317+0	0319+3	0335	N25	W46	.819	15155	14.7	18	-N				100	1.7	
VORO	18	0317	0319	0322	N26	W46	.824	15155	14.7	5	-B		C	0319	90	1.6	D
PALE	18	0317	0322	0348D	N25	W47	.827	15155	14.6	31D	-N	3	C		115		DE F
144 CULG	18	0401	0404	0412	N09	W90	1.000	15139	11.4	11	-N		C	0404	10		Y5
145 CULG	18	0434	0438	0450	N28	W49	.855	15155	14.5	16	-F		C	0438	40	.8	T Y5
146 VORO	18	0443	0445	0451	N19	E45	.781	15154	21.6	8	-B		C	0445	81	1.3	D Y5
147 CULG	18	0556	0626	0648	N09	W90	1.000	15139	11.5	52	?N		C	0626	60		Y5
	IMP.1 NO		MITK2	TACH1													
148 HITK	18	0603	0604	0627D	N26	W50	.854	15155	14.5	24D	-F		C	0604	60	1.2	E Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR. DAY			COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	FEB									MIN.								
149 MONT	18	0804	0806	0810	N28	W55	.895	15155	14.2	6	-F		C	0806	50		E	Y5
150 ABST	18	0835E	0836	0841D	N26	W54	.882	15155	14.3	60	-F		P	0836	61	1.4	EJK	Y5
151 ABST	18	0855E	0857	0910D	N21	E88	1.000	15161	25.0	15D	-F		P	0857	70		DJ	Y5
152 RAMY	18	1303	1304	1311	S25	E61	.873	15156	23.1	8	-F	3	C		16			Y5
	18	1318	1322	NO FLARE PATROL														
153 MCMA	18	1447		1530	N21	E80	.993	15161	24.6	43	-F		C	1450			EK	Y5
154 MCMA	18	1613	1616	1625	N21	E80	.993	15161	24.7	12	-N		C	1616				Y5
	18	1845	1856	NO FLARE PATROL														
	18	1901	1911	NO FLARE PATROL														
155 MCMA	18	1925	1926	1926D	S25	E60	.866	15156	23.3	10	-F		C	1926	20	.4	D	Y5
156 RAMY	18	1927	1928	1929	N20	E40	.739	15154	21.8	2	-N	3	C		32			Y5
	18	1933	1943	NO FLARE PATROL														
	18	1944	1952	NO FLARE PATROL														
157 MCMA	18	2000E		2013D	N28	W58	.913	15155	14.5	130	-N		C	2001	50	1.4	E	Y5
	18	2014	2030	NO FLARE PATROL														
	18	2138	2147	NO FLARE PATROL														
158 CULG	18	2202	2206	2216	N28	W61	.930	15155	14.3	14	-N		C	2206	50	1.3		Y5
159 CULG	19	0014	0018	0026	N29	W61	.932	15155	14.4	12	-F		C	0018	30			Y5
GRP66160	19	0416+1	0417+1	0422	N26	W62	.931	15155	14.5	6	-N				50		E	
CULG	19	0416	0417	0422	N26	W62	.931	15155	14.5	6	-F		C	0417	40			
VORO	19	0417	0418	0422	N26	W62	.931	15155	14.5	5	-B		C	0418	63	1.6	E	
161 CULG	19	0454	0456	0507	N19	E69	.955	15161	24.4	13	-F		C	0456	20			Y5
162 RAMY	19	1131	1133	1146	N25	W65	.944	15155	14.6	15	-N	2	C		37			Y5
163 MCMA	19	1320E		1600	N28	W67	.958	15155	14.5	160D	-N		C	1320	40	1.6	E	Y5
164 MCMA	19	1453E	1454	1457	N23	E68	.956	15161	24.7	4D	-F		C	1454	20	.7	D	Y5
165 MCMA	19	1727	1729	1745	N32	E06	.635	15153	20.2	18	-F		C	1729	50	.7	E	Y5
	19	2014	2047	NO FLARE PATROL														
	19	2055	2207	NO FLARE PATROL														
166 CULG	19	2238	2240	2248	N29	W77	.991	15155	14.2	10	-F		C	2240	10			Y5
	19	2300	2307	NO FLARE PATROL														
GRP66167	20	0007+6	0010+6	0019	N20	E60	.905	15161	24.5	12	-N				25	.6		
PALE	20	0007	0010	0015	N22	E59	.904	15161	24.4	8	-B	3	C		34		DE	
CULG	20	0013	0016	0022	N18	E62	.914	15161	24.7	9	-F		C	0016	20	.5		
168 CULG	20	0058	0105	0120	N25	W76	.986	15155	14.3	22	-F		C	0105	40			Y5
169 CULG	20	0107	0111	0128	N21	E58	.894	15161	24.4	21	-N		C	0111	40	.9		Y5
170 CULG	20	0120	0122	0145	S25	W54	.814	15148	16.0	25	-F		C	0122	20	.3	G	Y5
	20	0315	0317	NO FLARE PATROL														
171 CULG	20	0430	0434	0440	N28	W01	.574	15153	20.1	10	-F		C	0434	15	.2		Y5
172 MITK	20	0610	0612	0614	N21	E55	.873	15161	24.4	4	-N		C	0612	50	1.0	D	Y5
173 CULG	20	0625	0647	0700	N26	W75	.984	15155	14.6	35	-F		C	0647	30			Y5
174 CULG	20	0627	0632	0646	N30	E00	.602	15153	20.3	19	-N		C	0632	20	.3		Y5
	20	1359	1410	NO FLARE PATROL														
	20	1415	1425	NO FLARE PATROL														
	20	1431	1452	NO FLARE PATROL														

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	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	
	20	1500	1510	NO FLARE PATROL													
	20	1522	1530	NO FLARE PATROL													
175 RAMY	20	1529E	1529U	1532D	N24	E50	.846	15161	24.4	3D	-N	2	C		18		Y5
176 CATA	20	1530E	1540	1555	N28	W07	.583	15153	20.1	25D	-B	2	P	1540	56	.7	Y5
	20	1540	1555	NO FLARE PATROL													
	20	1600	1738	NO FLARE PATROL													
177 RAMY	20	1609	1610	1625D	N37	E73	.987	15162	26.1	16D	2B	3	C		176		Y5
178 RAMY	20	1752	1752	1801	N37	E72	.985	15162	26.1	9	-N	3	C		11		Y5
	20	1754	2231	NO FLARE PATROL													
	20	2236	2321	NO FLARE PATROL													
	21	0100	0231	NO FLARE PATROL													
	21	0232	0530	NO FLARE PATROL													
179 MITK	21	0630	0632	0634D	N20	E34	.682	15161	23.8	4D	-F		P	0632	50	.7	E Y5
180 CATA	21	0730	0735	0745	N27	W90	1.002	15155	14.6	15	1N	2	C	0735	56		Y5
181 CATA	21	0805	0805	0820D	N27	W90	1.002	15155	14.6	15D	1N	2	P	0805	73		Y5
GRP66182	21	0835	0844 0900	0904D	N28	W90	1.002	15155	14.6	29	-F						H
KANZ	21	0835	0844	0904	N27	W90	1.002	15155	14.6	29	-F						
KHAR	21	0855E	0900	0950D	N29	W90	1.002	15155	14.6	55D	1F		P	0901			H
GRP66183	21	1118	1118	1130	N18	E32	.647	15161	23.9	12	-F						D
KANZ	21	1118	1118	1129	N19	E32	.655	15161	23.9	11	-F						
KHAR	21	1120E	1120	1130D	N18	E32	.647	15161	23.9	10D	-F		P				D
	21	1443	1453	NO FLARE PATROL													
GRP66184	21	1518+3	1520+2	1529	N22	E37	.725	15161	24.4	11	-F				25	.4	DH
MCMA	21	1518	1520	1532	N23	E40	.758	15161	24.6	14	-F		C	1520	30	.5	DH
RAMY	21	1521	1522	1526	N21	E34	.690	15161	24.2	5	-N	3	C		19		
	21	1912	1926	NO FLARE PATROL													
	21	2008	2104	NO FLARE PATROL													
	21	2123	2132	NO FLARE PATROL													
185 CULG	21	2233	2249	2312	S18	E73	.949	15163	27.4	39	1F		C	2249	70		Y5
GRP66186	21	2250+2	2257+3	2328	N37	E63	.958	15162	26.7	38	2N				290		EHY
CULG	21	2250	2257	2325	N36	E66	.967	15162	26.9	35	2N		C	2257	260		
PALE	21	2252	2300	2330	N37	E60	.947	15162	26.5	38	2N	3	C		334		Y H
MITK	21	2305E		2328	N37	E62	.954	15162	26.6	23D	1B		C	2308	110		E
GRP66187	21	2256+5	2301+4	2311	N19	E28	.615	15161	24.1	15	-N						L
CULG	21	2256	2305	2320	N18	E26	.586	15161	23.9	24	-N		C	2305	60	.7	FL
PALE	21	2301	2301	2302	N20	E30	.643	15161	24.2	1	-N	3	C		24		DE
	21	2259	2305	NO FLARE PATROL													
GRP66188	22	0002+7	0009+1	0012	N19	E29	.625	15161	24.2	10	-F				40	.5	D
CULG	22	0002	0010	0018	N18	E30	.627	15161	24.3	16	-F		C	0010	40	.5	
PALE	22	0008	0009	0010	N20	E29	.634	15161	24.2	2	-N	3	C		34		DE
MITK	22	0009	0009	0012	N19	E28	.615	15161	24.1	3	-F		C	0009	50	.7	D
189 CULG	22	0200	0215U	0250	N26	E27	.672	15161	24.1	50	-N		C	0215	70	.9	Y5
GRP66190	22	0505+3	0511+1	0518	S18	E90	.999	15169	98.0	13	1F				70		EGH
CULG	22	0505	0511	0520D	S20	E90	.999	15169	29.0	15D	1N		C	0511	100		
MITK	22	0508	0512	0516	S17	E90	.999	15169	29.0	8	-F		C	0512	50		EGH
191 KHAR	22	1045E	1045	1055D	N20	E28	.624	15161	24.5	10D	-F		P	1045	90	1.2	E Y5
192 KANZ	22	1121	1125	1138	N20	E26	.605	15161	24.4	17	-F						Y5
GRP66193	22	1254+1	1254+1	1309	N18	00	.424	15160	22.5	15	-F						
KANZ	22	1254	1254	1307	N20	E00	.455	15160	22.5	13	-F						
CATA	22	1255	1255	1310	N16	W01	.392	15160	22.5	15	-N	2	C	1255	56	.6	

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX LON. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	FEB																	
GRP66194	22	1722	1724 1733	1752	N22	W12	.520	15154	21.8	30	-F						EK	
MCMA	22	1722	1724	1752	N22	W12	.520	15154	21.8	30	-F		C	1733	60	.7	EK	
MCMA	22	1722	1733	1752	N22	W12	.520	15154	21.8	30	-F		C					
GRP66195	22	1826+8	1833+2	1902	N21	W13	.513	15154	21.8	36	-B				80	.9	E	
MCMA	22	1826	1833	1905	N22	W12	.520	15154	21.9	39	-N		C	1833	60	.7	E	
RAMY	22	1833	1835	1859	N20	W13	.499	15154	21.8	26	-B	2	C		90		DE	
PALE	22	1834	1835U	1840D	N20	W13	.499	15154	21.8	6D	-B	3	C		82		DE	
	22	2010	2044	NO FLARE PATROL														
	22	2045	2052	NO FLARE PATROL														
	22	2147	2209	NO FLARE PATROL														
	22	2218	2237	NO FLARE PATROL														
196 CULG	22	2311	2320	2338	N20	E21	.560	15161	24.5	27	-F		C	2320	50	.6		Y5
	23	0105	0108	NO FLARE PATROL														
197 VORO	23	0109	0109	0110	N17	W06	.420	15160	22.6	1	-N		C	0109	18	.2	D	Y5
GRP66198	23	0224+1	0228+2	0245	N20	W15	.513	15154	22.0	21	-N							
VORO	23	0224	0228	0245	N20	W15	.513	15154	22.0	21	1N		C	0228	215	2.4	E	
MANI	23	0225	0230	0235D	N20	W15	.513	15154	22.0	10D	-F	2	P		80	1.0	F	
GRP66199	23	0313+0	0314+5	0332	N21	E19	.555	15161	24.6	19	-N				80	.9	EU	
VORO	23	0313	0319	0332	N21	E18	.548	15161	24.5	19	-B		C	0319	90	1.0	E	
MITK	23	0313	0314	0328	N21	E18	.548	15161	24.5	15	-N		C	0314	80	1.0	E	
CULG	23	0313	0314U	0350	N20	E20	.552	15161	24.6	37	-N		C	0314	70	.8	U	
	23	0703	0705	NO FLARE PATROL														
200 ABST	23	0756	0757	0800	N22	W20	.575	15154	21.8	4	-F		C	0757	79	.9	DJK	Y5
	23	0900	0902	NO FLARE PATROL														
201 ABST	23	0923	0924	0930D	S20	E53	.797	15163	27.4	7D	-F		P	0924	70	1.2	DJ	Y5
GRP66202	23	1010+1	1012+0	1020	N34	W43	.846	15153	20.2	10	-F				60	1.1	J	
ABST	23	1010	1012	1022	N33	W44	.847	15153	20.1	12	-F		C	1012	79	1.5	EJ	
MONT	23	1011	1012	1017	N35	W43	.852	15153	20.2	6	-F		C	1012	50		D	
	23	1150	1250	NO FLARE PATROL														
	23	1300	1310	NO FLARE PATROL														
203 MCMA	23	1323E		1552D	N21	E14	.519	15161	24.6	149D	-N		P	1323	150	1.8	BE	Y5
204 MCMA	23	1323E		1340D	S26	W04	.330	15156	23.3	17D	-N	*	P	1325	50	.5	E	Y5
205 MCMA	23	1420	1421	1430	S26	W04	.330	15156	23.3	10	-F		C	1421	50	.5	E	Y5
	23	1555	2034	NO FLARE PATROL														
206 PALE	23	1747E	1748U	1756	N22	E06	.495	15161	24.2	9D	-N	3	C		44		DE	Y5
207 PALE	23	1852E	1855	1900	N24	E68	.957		28.9	8D	-N	3	C		19		DE	Y5
208 CULG	23	2106	2107	2121	N19	E05	.447	15161	24.3	15	-F		C	2107	20	.2		Y5
	23	2136	2243	NO FLARE PATROL														
209 MANI	23	2320E	2320U	2327D	N20	E04	.460	15161	24.3	7D	-F	3	V		30	.4	F	Y5
210 PALE	23	2342E	2346U	2353	N20	E03	.458	15161	24.2	11D	-N	3	C		25		DE	Y5
211 MITK	24	0028	0029	0034	S22	E90	.999	15170	30.8	6	-B		C	0029	50		DH	Y5
212 PALE	24	0101	0104	0105	N20	E03	.458	15161	24.3	4	-N	3	C		20		F	Y5
GRP66213	24	0241+0	0242+1	0256	N20	E02	.457	15161	24.3	15	-B				120	1.3		
VORO	24	0241	0242	0253	N20	E02	.457	15161	24.3	12	-B		C	0242	116	1.3	D	
PALE	24	0241	0243	0256	N20	E02	.457	15161	24.3	15	-B	3	C		143		FDE	
CULG	24	0247E	0247U	0258	N19	E02	.442	15161	24.3	11D	-F		P	0247	40	.4		
GRP66214	24	0300+2	0301+2	0306	N20	00	.456	15161	24.1	6	-N				50	.6		
VORO	24	0300	0301	0305	N20	W01	.456	15161	24.1	5	-B		C	0301	63	.7	D	
PALE	24	0302	0303	0307	N20	E01	.456	15161	24.2	5	-N	3	C		45		F	

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg	
GRP66215	24	0338+2	0339 0348	0352	N22	E01	.487	15161	24.2	14	-N						D
VORO	24	0338	0339	0342	N20	W01	.456	15161	24.1	4	-B		C	0339	72	.8	D
CULG	24	0340	0348U	0402	N25	E03	.534	15161	24.4	22	-F		C	0348	60	.7	
GRP66216	24	0433+8	0435+1 0443	0445	N18	E60	.901	15167	28.7	12	-F				50	1.1	GHJ
CULG	24	0433E	0435U	0440D	N16	E60	.897	15167	28.7	7D	-F		P	0435	40	1.4	
MITK	24	0433	0436	0444	N18	E60	.901	15167	28.7	11	-F		C	0436	60	1.4	DG
VORO	24	0441	0443	0446	N20	E61	.912	15167	28.8	5	-N		C	0443	81	1.8	EHJ
217 CULG	24	0437	0512	0530	N18	W02	.426	15161	24.0	53	-F		C	0512	20	.2	FK Y5
	24	0515	0522	NO FLARE PATROL													
	24	0545	0604	NO FLARE PATROL													
	24	0608	0645	NO FLARE PATROL													
218 MANI	24	0739E	0740	0745	N19	W04	.445	15161	24.0	6D	-F	2	P		100	1.2	Y5
219 KHAR	24	1128E		1130D	N20	W04	.460	15161	24.2	2D	-F		P	1128	66	.7	O Y5
	24	1626	1653	NO FLARE PATROL													
	24	1659	1748	NO FLARE PATROL													
	24	1942	2045	NO FLARE PATROL													
220 PALE	24	2003	2005	2010	N18	W12	.466	15161	23.9	7	-B	3	C		146		DE Y5
GRP66221	24	2049+1	2052+1	2102D	N18	W12	.466	15161	24.0	13	-N				50	.6	
CULG	24	2049	2053	2132	N18	W12	.466	15161	24.0	43	-N		C	2053	40	.4	F
PALE	24	2050	2052	2102	N18	W12	.466	15161	24.0	12	-N	3	C		67		DE
GRP66222	24	2203	2209+4	2222	N19	W10	.468	15161	24.2	19	-F				35	.4	F
CULG	24	2203	2209U	2226	N18	W12	.466	15161	24.0	23	-F		C	2209	40	.4	
PALE	24	2212E	2213U	2217	N20	W08	.473	15161	24.3	5D	-N	3	C		25		F
	24	2349	2354	NO FLARE PATROL													
	24	2358	0015	NO FLARE PATROL													
GRP66223	25	0302+3	0311+0	0331	N19	W11	.474	15161	24.3	29	1N				190	2.1	EHJV
CULG	25	0302	0311	0327	N19	W06	.451	15161	24.7	25	-N		P	0311	140	1.6	VJ
VORO	25	0305	0311	0334	N20	W16	.521	15161	23.9	29	1B		C	0311	251	2.9	EHJ
	25	0509	0614	NO FLARE PATROL													
	25	0626	0656	NO FLARE PATROL													
	25	0659	0811	NO FLARE PATROL													
224 ABST	25	0811E	0811	0827D	N21	W16	.533	15161	24.1	16D	1N		P	0811	175	2.1	D Y5
	25	0827	0845	NO FLARE PATROL													
225 KHAR	25	0857E	0900	0905D	N19	W18	.524	15161	24.0	8D	-F		P				D Y5
226 KHAR	25	0956E		1008D	N20	W47	.805	15154	21.9	12D	-F		P	1000			DL Y5
GRP66227	25	1023	1047	1055	N20	W19	.544	15161	24.0	32	-F						HJZ
ABST	25	1023	1047	1055	N21	W20	.564	15161	23.9	32	-F		P	1047	87	1.0	FJZ
KHAR	25	1027E		1055D	N19	W18	.524	15161	24.1	28D	-F		P	1028			DH
	25	1101	1125	NO FLARE PATROL													
	25	1249	1328	NO FLARE PATROL													
	25	1404	1455	NO FLARE PATROL													
228 RAMY	25	1418	1421	1430D	N17	W22	.537	15161	23.9	12D	-B	3	C		30		DE S Y5
GRP66229	25	1449	1450	1512	N19	W21	.550	15161	24.0	23	1B				190	2.2	FU
RAMY	25	1449	1450	1509	N18	W22	.548	15161	24.0	20	1B	3	C		241		U F
CATA	25	1455E	1455	1515	N21	W20	.564	15161	24.1	20D	-B	2	P	1455	140	1.7	
	25	1515	1742	NO FLARE PATROL													
GRP66230	25	1916+8	1920+5	1929	N18	W21	.539	15161	24.2	13	-N				45	.5	F
PALE	25	1916	1920	1926	N18	W24	.567	15161	24.0	10	-N	3	C		36		F
RAMY	25	1924	1925	1931	N19	W19	.532	15161	24.4	7	-N	1	C		48		
231 RAMY	25	1951	1956	2011	S25	E64	.895	15170	30.6	20	-N	2	C		62		Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	FEB																
GRP66232	25	2113	2122	2128	N19	W22	.559	15161	24.2	15	-N						F
PALE	25	2113	2122	2128	N18	W24	.567	15161	24.1	15	-N	3	C		132		F
PALE	25	2113	2120	2128	N18	W24	.567	15161	24.1	15	-F	3	C		37		F
PALE	25	2120	2122	2128	N20	W21	.561	15161	24.3	8	-N	3	C		132		F
PALE	25	2120	2120	2128	N20	W21	.561	15161	24.3	8	-F	3	C		37		F
GRP66233	25	2153+7	2156 2203+2	2213	N19	W23	.568	15161	24.2	20	-N						EH
PALE	25	2153	2205	2212	N20	W21	.561	15161	24.3	19	1B	3	C		215		HDE
PALE	25	2153	2156	2212	N20	W21	.561	15161	24.3	19	-F	3	C		69		HDE
CULG	25	2200	2203	2213	N18	W26	.587	15161	24.0	13	-F		C	2203	30	.4	
GRP66234	25	2242>9	2310 2320	2342	N19	W24	.577	15161	24.1	60	-F						
PALE	25	2242	2310	2343	N20	W22	.570	15161	24.3	61	-N	3	C		185		DE F
CULG	25	2314	2320	2340	N19	W26	.596	15161	24.0	26	-F		C	2320	50	.7	
235 PALE	26	0027	0029	0034	N20	W22	.570	15161	24.4	7	-N	3	C		102		DE F Y5
GRP66236	26	0054>9	0104 0111+2	0125	N18	W28	.607	15161	23.9	31	-B				60	.7	K
CULG	26	0054	0113U	0254	N18	W28	.607	15161	23.9	120	-N		C	0113	80	1.0	KT
MITK	26	0101	0111	0119	N18	W29	.617	15161	23.9	18	-B		C	0111	50	.7	E
PALE	26	0104	0104	0125	N20	W23	.579	15161	24.3	21	1B	3	C		289		DE F
VORO	26	0109E		0116D	N18	W28	.607	15161	23.9	7D	-B		V	0111	54	.6	D
237 CULG	26	0200	0221U	0300D	N10	W66	.927		21.1	60D	-F		C	0221	20	.5	Y5
GRP66238	26	0226	0230+2	0243	N19	W26	.597	15161	24.2	17	-B				90	1.1	D
VORO	26	0226	0230	0243	N18	W29	.617	15161	23.9	17	-B	*	C	0230	81	1.0	D
PALE	26	0231E	0232U	0243D	N20	W23	.579	15161	24.4	12D	-B	*	C		102		DE
GRP66239	26	0618	0620+0	0637	N18	W30	.627	15161	24.0	19	-B						EHJ
MITK	26	0618	0620	0634	N18	W30	.627	15161	24.0	16	-B		C	0620	100	1.3	EH
ABST	26	0620E	0620	0640D	N18	W30	.627	15161	24.0	20D	1B		P	0620	218	2.8	CEJ
240 ABST	26	0649	0651	0656D	N22	W33	.685	15161	23.8	9D	-F		P	0651	70	1.0	DJ Y5
241 ABST	26	0659E	0701	0706D	N20	W32	.664	15161	23.9	7D	-F		P	0701	70	.9	DJ Y5
242 ABST	26	0704E	0706	0724D	N39	E88	.729	15162	26.9	20D	-F		P	0706	79	1.2	DJK Y5
243 ABST	26	0712E	0714	0728D	S24	E61	.872	15170	30.9	16D	-F		P	0714	87	1.8	DJK Y5
244 ABST	26	0747	0749	0757	N19	W34	.676	15161	23.8	10	-N		C	0749	131	1.8	DJ Y5
245 ABST		0e 4	0805	0814	N20	W35	.693	15161	23.7	10	-F		C	0805	87	1.2	DJK Y5
246 ABST	26	3E	0835	0856D	N23	W23	.611	15161	24.6	23D	-F		P	0835	79	1.0	DJ Y5
	26	000	0921	NO FLARE PATROL													
247 ABST	26	1005	1007	1010	N19	W24	.578	15161	24.6	5	-F		C	1007	87	1.2	DJK Y5
248 ABST	26	1024E	1026	1044D	S24	E60	.864	15170	30.9	20D	-F		P	1026	61	1.2	DJ Y5
249 HTPR	26	1251	1256	1314	S16	E14	.281	15163	27.6	23	-F		C	1256	20	.2	E Y5
GRP66250	26	1251	1256	1314	S16	E14	.281	15167	27.6	23	-F						E
HTPR	26	1250	1300	1323	N16	E31	.622	15167	28.9	33	-F	*	C	1300	30	.3	
LVOV	26	1257	1303	1311	N16	E31	.622	15167	28.9	14	-F	*	C	1303	150	1.8	D
251 HTPR	26	1309	1311	1319	N17	W39	.713	15161	23.6	10	-F		C	1311	10	.1	Y5
GRP66252	26	1412	1414	1421	N18	W37	.699	15161	23.8	9	-N				35	.5	
RAMY	26	1412	1414	1419	N18	W36	.689	15161	23.9	7	-B	3	C		34		
HTPR	26	1413E		1422	N18	W39	.719	15161	23.7	9D	-N		C	1416	40	.4	B
GRP66253	26	1419	1421	1434	S24	E55	.821	15170	99.7	15	-N				30	.5	E
RAMY	26	1419	1421	1428	S25	E54	.814	15170	30.6	9	-B	3	C		18		
HCHA	26	1421E		1440	S24	E57	.839	15170	30.9	19D	-N		C	1424	40	.8	E
254 RAMY	26	1719	1721	1810	S25	E54	.814	15170	30.8	51	-N	3	C		47		H Y5
255 PALE	26	2008	2009	2019	N20	W33	.673	15161	24.4	11	-N	3	C		55		F Y5
256 RAMY	26	2049	2058	2107	N19	W35	.686	15161	24.2	18	-N	2	C		60		Y5

Hα SOLAR FLARES

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE - FEB	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
GRP66257	26	2049	2058	2107	N19	W35	.686	15170	24.2	18	-N							
RAMY	26	2043	2102	2117D	S25	E52	.795	15170	30.8	34D	-B	*	C		87			
CULG	26	2058	2107	2149	S24	E55	.821	15170	31.0	51	-F	*	C	2107	30	.5		
PALE	26	2104	2108	2112	S26	E51	.788	15170	30.7	8	-N	*	C		32		F	
GRP66258	26	2325	2331+3	2348	N21	W33	.681	15161	24.5	23	-N				80	1.1	F	
CULG	26	2325	2334	2358	N20	W33	.673	15161	24.5	33	-N		C	2334	60	1.3	F	
MITK	26	2327E		2348	N22	W31	.671	15161	24.7	21D	1N		C	2327	150	2.1	E	
MANI	26	2331E	2331U	2340	N20	W34	.683	15161	24.4	9D	-F	3	P		80	1.2	F	
GRP66259	26	2355+7	0003+2	0011D	N17	W40	.723	15161	24.0	16	-N				100	1.4	E	
MITK	27	0002	0003	0011	N18	W41	.739	15161	23.9	9	-N		C	0003	80	1.2	E	
CULG	26	2355	2405	0057	N17	W40	.723	15161	24.0	62	-N		C	2405	120	1.8		
GRP66260	27	0226>9	0319 0355	0500D	N27	E47	.838	15168	99.6	154	1N						EKU	
CULG	27	0226	0355U	0810D	N27	E45	.823	15168	30.5	344D	2N		C	0355	270	5.4	U	
MITK	27	0247	0319	0500	N27	E50	.859	15168	30.9	133	1N		C	0319	150	2.9	EK	
GRP66261	27	0500+1	0502+0	0514	N19	W48	.810	15161	23.6	14	-N				50	.8	D	
CULG	27	0500	0502	0518	N18	W48	.805	15161	23.6	18	-N		C	0504	50	.8	T	
MITK	27	0501	0502	0510	N21	W48	.818	15161	23.6	9	-N		C	0502	60	1.0	D	
GRP66262	27	0559+1	0601+0	0609	N19	W48	.810	15161	23.6	10	-N				70	1.2	D	
CULG	27	0559	0601	0609	N18	W48	.805	15161	23.6	10	-N		C	0601	100	1.7	T	
MITK	27	0600	0601	0608	N21	W48	.818	15161	23.7	8	-N		C	0601	50	.9	D	
263 ABST	27	0702E	0708	0716D	N19	W45	.783	15161	23.9	14D	-F		P	0708	70	1.1	DJ	Y5
264 CATA	27	0850	0850	0855	N18	W60	.901	15160	22.9	5	-N	2	C	0850	56	1.3		Y5
GRP66265	27	1223+2	1227	1238	N18	W46	.787	15161	24.1	15	-N							
WEND	27	1223		1237	N17	W48	.801	15161	23.9	14	-N							
RAMY	27	1225	1227	1238	N19	W44	.773	15161	24.2	13	-B	3	C		39			
RAMY	27	1225	1227	1238	N19	W44	.773	15161	24.2	13	-B	3	C		39			
	27	1443	1500	NO FLARE PATROL														
	27	1630	1636	NO FLARE PATROL														
266 PALE	27	1809	1811	1818	N37	W13	.717	15162	26.8	9	-N	3	C		23		F	Y5
GRP66267	27	1902	1903 1906	1909	N37	W13	.717	15162	26.8	7	-N						F	
PALE	27	1902	1903	1909	N37	W13	.717	15162	26.8	7	-N	3	C		26		F	
PALE	27	1902	1906	1909	N37	W13	.717	15162	26.8	7	-F	3	C		51		F	
268 PALE	27	1932	1935	1953	N39	W14	.743	15162	26.8	21	-N	3	C		54		F	Y5
269 PALE	27	1947	1948	2040	S29	E25	.531	15166	29.7	53	-N	3	C		21		F	Y5
	27	2022	2036	NO FLARE PATROL														
270 PALE	27	2138	2139	2142	N39	W15	.746	15162	26.8	4	-N	3	C		24		F	Y5
271 PALE	27	2145	2147	2151	N20	W50	.831	15161	24.2	6	-N	3	C		16		F	Y5
	27	2309	2315	NO FLARE PATROL														
GRP66272	28	0147	0150+2	0207	N38	W17	.742	15162	26.8	20	-F				70	1.0	F	
PALE	28	0147	0152	0207	N39	W17	.753	15162	26.8	20	-N	3	C		79		F	
MANI	28	0149E	0150	0200D	N38	W17	.742	15162	26.8	11D	-F	2	P		70	1.1	F	
273 PALE	28	0306	0307	0309	N39	W18	.756	15162	26.8	3	-N	3	C		38		F	Y5
GRP66274	28	0736	0742+3	0756	N22	W49	.831	15161	24.6	20	1N				140	2.4	E	
TACH	28	0736	0742	0756	N23	W51	.851	15161	24.5	20	1N		C	0742	115	2.4	E	
CATA	28	0740E	0745	0755D	N21	W47	.810	15161	24.8	15D	1B	2	P	0745	168	2.9		
275 KANZ	28	0923	0927	0942	S15	W15	.286	15163	27.3	19	-F							Y5
	28	1255	1258	NO FLARE PATROL														
GRP66276	28	1345+1	1348+2	1411	N15	E02	.379	15167	28.7	26	-F							
KANZ	28	1345	1350	1412	N15	E02	.379	15167	28.7	27	-F							
HTPR	28	1346	1348	1410	N15	E02	.379	15167	28.7	24	-F		C	1348	20	.2		

Hα SOLAR FLARES

FEBRUARY 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
					APPROX												
	DATE FEB	START	MAX. PHASE	END	LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONG.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
GRP66277	28	1511+4	1515+0	1526	N19	W11	.475	15165	27.8	15	-F						E
HTPR	28	1511	1515	1525	N20	W13	.501	15165	27.7	14	-F		C	1515	20	.2	E
KANZ	28	1515	1515	1526	N19	W09	.464	15165	28.0	11	-F						
278 HTPR	28	1558	1604	1612	S20	W18	.369	15163	27.3	14	-F		C	1604	10	.1	Y5
	28	1621	1628	NO FLARE PATROL													
	28	1631	1641	NO FLARE PATROL													
	28	1642	1658	NO FLARE PATROL													
	28	1733	2115	NO FLARE PATROL													
	28	2120	2129	NO FLARE PATROL													
	28	2140	2153	NO FLARE PATROL													
	28	2155	2202	NO FLARE PATROL													
	28	2206	2212	NO FLARE PATROL													
279 CULG	28	2230	2245	2258	N16	E90	1.001	15172	4.7	28	-F		C	2245	20		Y5

"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

FEBRUARY 1978

DAILY FLARE INDICES

Includes all Flares

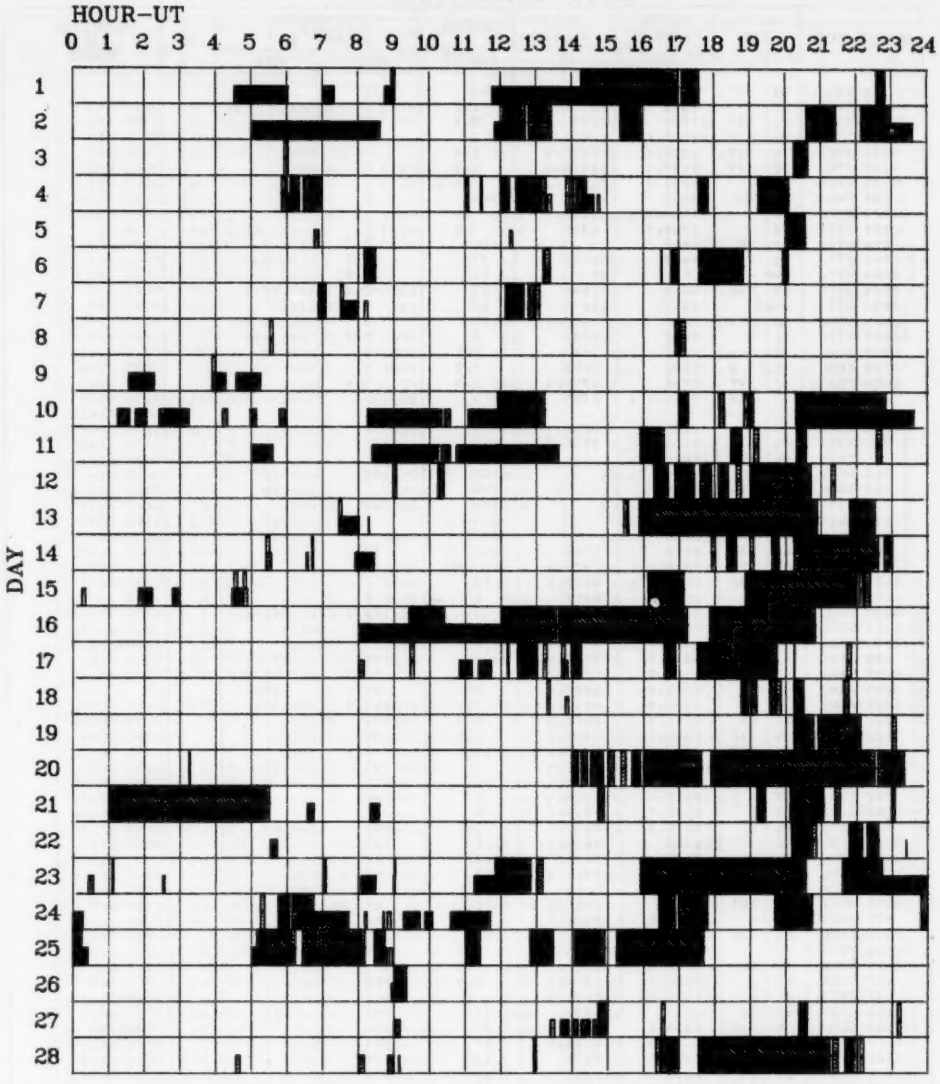
Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.
780201	39.43	20.4	780211	194.64	22.5	780221	75.40	17.9
780202	117.87	20.5	780212	295.70	20.3	780222	28.08	22.6
780203	405.33	23.5	780213	411.01	18.1	780223	69.47	17.0
780204	39.12	20.4	780214	88.59	20.6	780224	40.55	20.3
780205	47.50	23.5	780215	78.27	19.4	780225	94.36	16.6
780206	42.27	21.9	780216	96.53	14.9	780226	58.23	23.7
780207	68.57	22.9	780217	144.82	20.2	780227	31.77	23.3
780208	197.31	23.7	780218	28.57	22.9	780228	40.58	19.1
780209	412.93	23.9	780219	10.26	22.1			
780210	144.76	19.5	780220	189.77	15.7			

When no Flare Index is given, it is 0 for that day.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

FEBRUARY 1978



Observatories included in total patrol:

Abastumani	Haute Provence	Kanzelhohe	Manila	Tashkent
Athenes	Herstmonceux	Kiev	McMath-Hulbert	Tehran
Bucharest	Huancayo	Kodaikanal	Mitaka	Upice
Catania	Istanboul	Locarno	Monte Mario	Voroshilov
Culgoora	Kandilli	Lvov	Palehua	Wendelstein
			Ramey	Zürich

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

FEBRUARY 1978

FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
1	221	ABST 44 NS		0500	0720.5	240	17			
	9100	ARCE 3 S		1008	1008.1	1.2				
	9100	ARCE 41 SER		1008	1008.1	5.4				
	9100	ARCE 4 S/F		1010.6	1011.7	2				
	9100	ARCE 4 S/F		1020.1	1020.6	1.4				
	9100	ARCE 2 S/F		1022.1	1022.3	1.3				
	9100	ARCE 1 S		1035.6	1035.8	.8				
	260	ONDR 43 NS		1100		200	7			
	1420	ARCE 1 S		1104.3	1104.4	.4				
	2800	OTTA 8 S		1345.7	1346	.8	1	.5		
	2800	OTTA 27 RF		1443		122	2.8	2		
	2800	OTTA 24 R		1443	1520	37	2.8	1.4		
	2800	OTTA 24P R		1520		52	2.8			
	2800	OTTA 26 FAL		1612	1645	33	-2.8	-1.5		
	2800	OTTA 240AR		1817	1830	13	2.8			
	1420	BOUL 3 S		1818	1823.5	16	2	1		
	2800	OTTA 1 S		1822	1824	5	2.8	1.4		
	4995	BOUL 3 S		1843	1846	4.5	10	3		
	4995	BOUL 1 S		1851	1852	2.5	8	3		
	2695	PENT 2 S/F		2250	2250.1	2.5	9.4	4.8		
	208	VORO 4 S/F		2354.5	2355	1	50			
2	208	VORO 3 S		0205.5	0205.7	1.5	350 D			
	221	ABST 44 NS		0500	0815.5	240	28			
	127	TORN 44 NS		0800 E	1118.4	400 D	135			V=1
	260	ONDR 44 NS		0828 E		342 D	152	12		
	100	GORK 43 NS		0834		244		30		
	202	IZMI 43 NS		0930		150	46			
	240	OWIN 44 NS		1112 E		233 D		25		
	160	OWIN 44 NS		1112 E		233 D		25		
	245	SGMR 44 NS		1201 E	1859	592 D	33			
	410	SGMR 43 NS		1518.4	1925.5	334.6D	11			
	9100	ARCE 21 GRF		0803.5	0821.6	80				
	6100	KISV S		0814	0817	6	5			
	4995	MANI 3 S		0814.6	0816.5	3.4	78.8	51.2		
	1420	ARCE 4 S/F		0814.7	0816.7	8.8				
	10500	BERN 8 S		0814.7	0816.5	7	120			OPR
	606	MANI 3 S		0814.8	0816.9	4	232.3	153.2		
	1415	MANI 3 S		0814.8	0816.8	3	88.2	58.8		
	2695	MANI 3 S		0814.8	0816.6	3	50.7	30.4		
	8800	MANI 3 S		0814.8	0816.5	3.2	147.8	97.2		
	237	TRST 47 GB		0814.9	0817.3	5.9	825			83L
	9100	GORK 4 S/F		0815.1	0816.7	2.5	126			
	9100	GORK 29 PBI		0815.1	0817.4	13.4	12.5	2.8		
	113	POTS 45 C		0815.5	0816.4	2	700	35		
	3100	GRIM 3 S		0815.5	0816.5	2	27	9		
	202	IZMI 7 C		0815.5	0816.5	3	546	147		
	9100	ARCE 3 S		0815.7	0816.7	5				
	234	POTS 45 C		0815.8	0817.3	3.2	350	60		
	9500	BERL 4		0815	0816.1	5	107			
	3000	BERL 4		0815	0816.7	2.7	33			
	1470	BERL 4		0815	0817.3	8	81			
	2650	OWIN 3 S		0815	0816	3	25	5		
	15000	KISV 29 PBI		0912	0916.3	8	85			
	237	TRST 41 F		0925.2	0925.5	.5	98			8
	1420	ARCE 20 GRF		1000.7	1017.5	31				
	234	POTS 2		1018.5	1019.8	1.3	120	1		
	1420	ARCE 20 GRF		1042.6	1047.1	12.5				
	127	TORN 45 C		1108.2	1108.6	3.5	205			
	237	TRST 41 F		1131.4	1131.5	.2	410			20R
	3100	GRIM 47 GB		1133	1136	12	200	67		
	10500	BERN 4 S/F		1133.4	1136.4	20	264			OPR
	1470	BERL 4		1133.5	1136.5	17	321			
	3000	BERL 4		1133.8	1136	12	129			
	15000	KISV 29 PBI		1134	1137	16	376			
	9100	ARCE 4 S/F		1134.3	1136.6	5				
	9100	ARCE 29 PBI		1139.3		21				
	9500	BERL 4		1134.5	1135.5	16	228			
	650	GORK 3 S		1134.5	1137	5.5	135			
	650	GORK 29 PBI		1134.5	1140	12.1	22			
	127	TORN 47 GB		1134.5	1135.8	4.7	730	270		
	9100	GORK 21 GRF		1134.5	1139.5	14.4	16	5.8		
	950	GORK 3 S		1134.6	1135.9U	4.5	178			
	950	GORK 29 PBI		1134.6	1139	8.5	52			
	808	ONDR 3 S		1134.7		10.5	586	170		
	408	TRST 49 GB		1134.8	1136.7	7.2	650			
	2650	OWIN 45 C		1134		7	130 D			
	1420	ARCE 3 S		1134	1136.4	8.3				
	1420	ARCE 29 PBI		1142.3		22				
	6100	KISV S		1135	1136	5	6			
	202	IZMI 7 C		1135	1135.2	5	627	270		
	113	POTS 45 C		1135.1	1135.7	4	1100	250		
	228	HARS 47 GB		1135.2	1136.5	4	520	210		
	260	ONDR 4 S/F		1135.2	1136.8	5	216	155		

SOLAR RADIO EMISSION
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FEBRUARY 1978

FEB 1978	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	237	TRST	47	GB	1135.3	1136.7	3.9	810			49L
	234	POTS	45	C	1135.3	1136.7	3.8	320	60		
	536	ONDR	3	S	1135.3		5	429	273		
	536	ONDR	29	PBI	1140		20	26	7.5		
	100	GORK			1135.4	1139.4		3000			
	100	GORK	46	C	1135.4	1136.4U	6.8	3000			
	9100	GORK			1135.4		3.6	21			
	9400	HUAN	45	C	1135.4	1145.5	10.1	264.8	83.6		L
	33	UPIC	46	C	1135.6	1136	6.5				
	29	UPIC	46	C	1135.6	1137	6.6				
	160	DWIN	45	C	1135		4	500 D			
	240	DWIN	45	C	1135		4	500 D			
	237	TRST	41	F	1312.2	1312.3	.2	132			13L
	237	TRST	41	F	1313.6	1313.7	.2	520			7R
	2800	OTTA	20	GRF	1340		75	2.2	1.6		
	113	POTS	6		1427.3	1435	8.7	250			
	2800	OTTA	240	R	1512	1530	18	2.8	1.4		
	2800	OTTA	8	S	1607.7	1608.2	.7	3.6	1.6		
	2800	OTTA	20	GRF	1720	1726	20	2	1		
	2800	OTTA	23	GRF	1815	1830	47	2.8	1.5		
	1420	BCUL	45	C	1822.5	1824	7.5	11	4		
	4995	BOUL	45	C	1822.5	1824	6.5	10	3		
	2800	OTTA	1	S	1823.6	1824.2	4.5	8.2	3		
	1415	SGMR	3	S	1824	1825.1	1.5	12.7	5.1		
	410	SGMR	6	S	1824	1825	2	89.9	36		
	606	SGMR	3	S	1824	1825.2	1.4	21	8.4		
	2695	SGMR	3	S	1824.2	1825.1	3.8	11.6	4.6		
	2800	OTTA	27F	RF	1912		88	2.2	2		
	2800	OTTA	24	R	1912	1917	5	2.2	1.1		
	2800	OTTA	24P	R	1917		73	2.2			
	2800	OTTA	26	FAL	2030	2040	10	-2.2	-1.1		
	2695	PENT	23	GRF	2043	2140	130	6.8	3.4		
	1420	BCUL	8	S	2120.5	2121.5	3.5	6	2		
	2800	OTTA	1	S	2121.3	2121.8	1.5	5.4	2.7		
	1420	BOUL	8	S	2124.5	2126.5	2.5	3	1		
	2695	PENT	1	S	2126.5	2127	1	2.4	1.2		
	208	VORO	44	NS	2300 E	0139	360 D	70	29		
	2695	PENT	4	S/F	2328.5	2329	4	23	8		
3	5730	IRKU	45	C	0254.5	0254.7	2.5	7			WR
	5730	IRKU			0254.5	0255		8			WR
	5730	IRKU			0254.5	0256.7		4			WR
	5730	IRKU	1	S	0322	0322.3	1	8			
	606	MANI	3	S	0446.1	0446.3	.3	18.2	12.1		
	4995	MANI	3	S	0446.4	0446.6	.3	21	13.9		
	2695	MANI	3	S	0446.4	0446.7	.4	15.1	10.1		
	8800	MANI	1	S	0446.5	0446.6	.2	4	2		
	5730	IRKU	1	S	0446	0446.4	2	18			WL
	100	GORK	44	NS	0600 E		360		350		
	202	IZMI	44	NS	0700		300	60			
	127	TORN	44	NS	0720 E	1351.2	440 D	120			V=2
	160	DWIN	44	NS	0805 E		245 D		50		
	240	DWIN	44	NS	0805 E		245 D		70		
	260	ONDR	44	NS	0813 E		360 D	142	10		
	245	SGMR	44	NS	1200 E	1350	595 D	567			SWF
	410	SGMR	44	NS	1200 E	1347.4	595 D	328			3,5,CONT,
	950	GORK	3	S	0742	0742.4	10	154	77		
	650	GORK	4	S/F	0742	0742.3	1.3	88	20		
	1470	BERL	4		0747.5	0749.5	2.5	590			
	950	GORK	46	C	0747.6		2.6	5000			
	650	GORK	4	S/F	0747.6	0749.4	3.6	300			
	3100	CRIM	1	S	0748	0749	2	13	4		
	6100	KISV	4	S/F	0748	0749.2	2	2			
	15000	KISV	8	S	0748	0749	7	24 D			
	606	MANI	3	S	0748	0749.6	2.3	92.8	61.8		
	10500	BERN	3	S	0748.3	0749.1	4	27			OPR
	3000	BERL	4		0748.5	0749.2	1.5	13			
	9500	BERL	4		0748.5	0749.2	1.5	16			
	234	POTS	4		0748.7	0748.7	.9	100	5		
	9100	GORK	2	S/F	0748.7	0749.3	1.6	29	4		
	237	TRST	5	S	0748.7	0748.7	.1	1250	390		0
	237	TRST	41	F	0749	0749.3	.5	365			0
	2950	GORK	1	S	0749	0749.3	1.1	13	6		
	113	POTS	45	C	0749	0749.3	.8	800	200		
	2695	MANI	3	S	0749	0749.4	.6	37.8	22.6		
	8800	MANI	1	S	0749.2	0749.4	.4	8	4		I
	4995	MANI	1	S	0749.2	0749.4	.4	8.4	4.2		
	6100	KISV	21	GRF	0805	0808.3	5	2			
	1470	BERL	4		0805	0806	7	61			
	3000	BERL	4		0805	0806.2	3	10			
	808	ONDR	42	SER	0818	1110.7	241	222			
	930	BORD	8	S	0850.7	0851.1	.6	32	2		
	1420	ARCE	1	S	0851.6	0851.9	.8				
	33	UPIC	2	S/F	0922.4	0922.5	.3				
	29	UPIC	2	S/F	0922.5	0922.7	.4				

SOLAR RADIO EMISSION
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FEBRUARY 1978

FEB 1978	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	930	BORD	8	S	0924.4	0924.5	.1	23	2		
	1420	ARCE	1	S	0945.6	0946	1				
	930	BORD	41	F	0946	0947.3	1.4	32	2		
	33	UPIC	4	S/F	1017.8	1017.9	.5				
	29	UPIC	4	S/F	1018	1018.3	.4				
	1420	ARCE	1	S	1023	1023.1	.5				
	930	BORD	40	F	1044	1044.4	1	112	3		
	29	UPIC	42	SER	1050.1	1106.3	67.1				
	33	UPIC	42	SER	1050.1	1106	68.3				
	930	BORD	40	F	1108.7	1109.3	1.3	154	3		
	408	TRST	4	S/F	1110.4	1110.5	.2	34			
	408	TRST	4	S/F	1111.4	1111.4	.2	54			
	930	BORD	41	F	1141.5	1141.8	.8	20	2		
	930	BORD	41	F	1145	1145.8	1	41	3		
	1420	ARCE	2	S/F	1146	1146.4	1				
	930	BORD	8	S	1200	1200.2	.2	24	1		
	1420	ARCE	1	S	1204	1204.1	.4				
	1420	ARCE	1	S	1212.6	1212.7	.4				
	536	ONDR	8	S	1251.5	1251.5	.3	52			
	1420	ARCE	1	S	1251.6	1251.7	4.4				
	808	ONDR	4	S/F	1312.4	1315.2	3.5	22	4.3		
	930	BORD	41	F	1312.4	1313.3	2.1	116	2		
	1420	ARCE	46	C/F	1313.9	1315.1	2.2				
	1420	ARCE			1313.9	1314.4	1				
	1420	ARCE			1314.9	1315.1	1.2				
	33	UPIC	45	C	1321.6	1321.8	1.2				
	29	UPIC	45	C	1321.9	1322.2	1				
	33	UPIC	2	S/F	1324.5	1324.6	.3				
	29	UPIC	2	S/F	1324.6	1324.6	.4				
	237	TRST	41	F	1349.6	1349.8	.8	1230			D
	9100	ARCE	20	GRF	1350.4	1428.8	78.5				
	930	BORD	8	S	1350.5	1350.5	.1	22	2		
	237	TRST	41	F	1355.2	1355.2	.2	375			D
	234	POTS	45	C	1359.5	1359.8	.9	350	20		
	1420	ARCE	20	GRF	1414.7	1444.8	68				
	2800	OTTA	23	GRF	1540	1649	125	10	4		
	930	BORD	46	C	1607	1614.3	14	62	4		
	2800	CTTA	2	S/F	1608.2	1611.2	4.8	6.6	3.3		
	1420	ARCE	4	S/F	1608.4	1608.7	.7				AT SUNSET
	9400	HUAN	22	GRF	1609.1	1835.3	226.2	16.7	4.6		R
	18	HCMA	41	F	1720	1807	101			1	
	245	SGMR	46	C	1811	1812	4.5	724	217		3,CONT
	606	SGMR	4	S/F	1811.8	1815.3	3.7	78.1	23.4		3,CONT
	410	SGMR	7	C	1811.9	1815.3	3.7	271	81.3		3,CONT
	2800	OTTA	26A	FAL	1840	1930	50	-6.2	-3.1		
	2800	OTTA	8	S	1916.5	1916.5	.1	5.4			
	2800	OTTA	240	R	1945	1958	13	3	1.5		
	4995	BOUL	8	S	2000.5	2001.5	1.5	17	6		
	2800	OTTA	2	S/F	2000	2001.9	4	8.4	2.8		
	2695	PENT	29	PBI	2004	2004	8	2	1		
	4995	BOUL	8	S	2013	2015.5	4	33	11		
	2695	PENT	4	S/F	2014.2	2016	7.8	56	12		
	2800	OTTA	29	PBI	2022	2022	90	2.4	2.1		
	9400	HUAN	4	S/F	2014.6	2018.2	3.6	31.7	11.1		0
	4995	SGMR	3	S	2015	2016	2.6	27.7	8.3		CONT
	8800	SGMR	3	S	2015.2	2015.9	2	31.1	9.3		CONT
	2695	SGMR	3	S	2015.2	2015.9	6.3	47.8	14.3		CONT
	1415	SGMR	3	S	2015.5	2016.2	6	17.5	5.3		CONT
	1420	BOUL	1	S	2201.5	2202	1	3	1		
	1420	BOUL	45	C	2215	2216	6	20	7		
	2695	BCUL	2	SF	2216.5	2217	2.5	48	16		
	1420	BCUL	4	SF	2237.5	2238	1.5	7	2		
	4995	BCUL	8	S	2237.5	2238	1.5	15	5		
	2695	PENT	1	S	2238	2238.8	3	3.6	1.6		
	208	VORO	47	GB	2300 E	2305 U	12 D	350 D			
	208	VORO	44	NS	2300 E		360 D		11		
4	208	VORO	25	R	0300	0437	120 D	45	30		
	221	ABST	44	NS	0500	0709	240	29			
	100	GORK	44	NS	0600 E		60		5		
	100	GORK	43	NS	0830		85		10		
	260	ONDR	44	NS	0832 E		338 D	16			
	245	SGMR	44	NS	1159 E	2146	597 D	75.6			3G,CONT
	234	POTS	45	C	0721.6	0721.9	.6	120	8		
	1420	ARCE	21	GRF	0825	0849	57				
	127	TORN	40	F	0830 U	1032	90 U	25			
	113	POTS		S	0843.6	0843.6		200	70		
	1420	ARCE	3	S	0858.8	0859.1	3				PEN SKIP
	1470	BERL	4		0859	0900.5	6	24			
	3000	BERL	4		0859	0900	5	25			
	3100	CRIM	3	S	0859	0900.5	5	24	8		
	10500	BERN	4	S/F	0859.5	0900.1	1.5	13			OPR
	9100	ARCE	1	S	0859.8	0900.4	3				
	9100	GORK	2	S/F	0859.9	0900.3	.7	33	8		
	9500	BERL	4		0900	0900.5	.7	11			

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	6100	KISV	45	C	0900		0901.3	5		17			
	536	ONDR	8	S	0900		0900	.3		62			
	9100	ARCE	20	GRF	1302.8		1341.7	76					
	1420	ARCE	20	GRF	1303.2		1305.8	38					
	536	ONDR	2	S/F	1351		1351.6	1.5		9			
	18	MCMA	6	S	1435		1436	2				1	
	2800	OTTA	240	R	1517		1524.5	7.5		2.8	1.4		
	2800	OTTA	1	S	1524.9		1525.1	1		1.6	.6		
	4995	BOUL	45	C	1540		1540.5	2		30	10		
	2800	OTTA	22	GRF	1705		1800	170		7.8	3.9		
	208	VORO	44	NS	2300	E		360	D		11		
5	8800	MANI	8	S	0015.3		0016	1.2		341.8	76		
	221	ABST	44	NS	0500		0815	240		22			
	100	GORK	43	NS	0605			325			10		
	202	IZMI	44	NS	0700			300		52			
	127	TORN	44	NS	0710	E	0831.3	498	D	105			V=2
	260	ONDR	44	NS	0930	E		278	D	42	6		
	245	SGMR	44	NS	1158	E	1926.2	599	D	170			3G
	410	SGMR	44	NS	1158	E	1938.6	599	D	11			3G
	127	TORN			0710	E	1509			100			SUNSET
	9100	ARCE	24	R	0843.8			120					
	127	TORN	48	C	0956.1		1008.8	21	U	120	40		
	9100	ARCE	22	GRF	1137.2		1156.3	112					RECORDDISTURBED
	127	TORN	45	C	1142.7		1143.2	1.8		150	30		
	2800	OTTA	8	S	1500.8		1500.8	.5		2	1		
	1420	ARCE	4	S/F	1515.5		1515.5	1					
	2800	OTTA	22	GRF	1715		1835	130		4.6	2.5		
	208	VORO	44	NS	2300	E		360	D		14		
6	100	GORK	44	NS	0545	E		411			10		
	202	IZMI	44	NS	0700			300		25			
	127	TORN	44	NS	0710	E	1420.9	490	D	65			V=1
	260	ONDR	44	NS	0906	E		328	D	84	5		
	245	SGMR	44	NS	1157	E	1511.5	368	D	271			
	410	SGMR	44	NS	1157	E	1248	368	D	31			
	3000	BERL	1		0831.7		0832.4	3.3		4.7			
	1420	ARCE	1	S	0831.8		0832.2	1.5					
	1470	BERL	1		0832		0832.4	1.5		3.7			
	113	POTS	45	C	0917		0918.1	.5		100	15		
	1420	ARCE	3	S	0917.4		0918	1.2					
	100	GORK	3	S	0917.7		0918.2	2.7		80			
	1470	BERL	2		0917		0918.2	1.5		7.5			
	113	POTS	2		0929.8		0929.8	.2		120	2		
	100	GORK	41	F	0938.2		0938.5	3.4		80			
	100	GORK			0938.2		0941.2			80			
	930	BORD	8	S	1101.3		1101.3	.1		21	1		
	18	MCMA	6	S	1129		1130	2				1	
	18	MCMA	6	S	1139		1139	1				1	
	237	TRST	41	F	1225.1		1225.2	.2		530			0
	237	TRST	41	F	1252.5		1252.5	.1		158			0
	127	TORN	46	C	1300.4		1302.6	3.5		55	13		
	18	MCMA	6	S	1302		1303	2				1	
	237	TRST	41	F	1408.8		1408.8	.2		490			0
	237	TRST	41	F	1409.2		1409.7	.6		370			3R
	237	TRST	41	F	1415.6		1415.6	.4		257			4R
	237	TRST	41	F	1416.7		1416.8	.2		410			4R
	1420	ARCE	1	S	1431.4		1431.7	.6					
	930	BORD	8	S	1436		1436.2	.2		15	1		
	18	MCMA	6	S	1438		1441	4				1	
	2800	OTTA	21	GRF	1725		1755	90		3.2	2		
	2800	OTTA	1	S	1726.7		1727.7	1.5		2.2	1.1		
	2800	OTTA	1	S	1933.2		1933.3	1		2.2	.8		
	1420	BOUL	8	S	1937		1937.5	2		6	2		
	18	MCMA	6	S	2004		2006	3				1	
	208	VORO	44	NS	2300	E	0310	360	D	52	30		
7	234	POTS	45	C	0649.4		0649.5	.3		300	40		
	202	IZMI	44	NS	0700			300		42			
	127	TORN	44	NS	0720	E	1421.9	480	D	120			V=2
	260	ONDR	44	NS	0800	E		382	D	44	5		
	9100	ARCE	4	S/F	0827.3		0827.4	2					RECORDDISTURBED
	930	BORD	41	F	0831.2		0831.7	.4		37	2		
	9100	ARCE	46	C/F	0907.7		0909.7	3.4					
	9100	ARCE			0907.7		0908	1.6					
	9100	ARCE			0909.3		0909.7	1.8					
	536	ONDR	42	SER	0911.7		0926.3	15		43			
	9100	ARCE	46	C/F	0928.2		0930.4	6					
	9100	ARCE			0928.2		0928.6	1.6					
	9100	ARCE			0929.8		0930.4	4.4					
	808	ONDR	8	S	0941.6		0941.6	.3		404			
	9100	ARCE	20	GRF	1000.2		1102.5	77					
	113	POTS	45	C	1034		1034.5	.6		200	15		
	237	TRST	41	F	1047.1		1047.1	.4		420			9R
	15000	KISV	3	S	1051		1052	5		8			

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FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	930	BORD	8 S	1052.8	1053	.2	24	1		
	1420	ARCE	40 F	1101.7	1102.2	9.2				
	1470	BERL	22	1101	1102.2	14	5.8			
	9500	BERL	20	1101	1102.4	9	3.7			
	3000	BERL	20	1102	1103.5	6	5.3			
	237	TRST	41 F	1132.7	1132.8	.3	310			5R
	113	POTS	2	1200.3	1202.8	2.6	200	4		
	9100	ARCE	3 S	1246.3	1246.5	1.1				
	536	ONDR	8 S	1325.3	1325.3	.3	38			
	237	TRST	41 F	1450	1450	.6	422			3R
	9100	ARCE	3 S	1504.2	1504.8	1.8				
	9100	ARCE	3 S	1554.3	1554.5	1				
	9400	HUAN	20 GRF	1714.1	1806.5	92.4	9.9	3.9		R
	2800	OTTA	20 GRF	1715	1720	17	3.2	1.6		
	9400	HUAN	1 S	2114.7	2116.8	2.1	21.4	8.2		0
	2800	OTTA	8 S	2115	2115	.1	4.6			
	208	VORO	44 NS	2300 E	0320	360 D	30	25		
8	8800	MANI	3 S	0356.8	0356.9	.5	47.3	28.3		
	4995	MANI	3 S	0356.8	0357	.5	21.6	12		
	100	HIRA	44 NS	0450 E		200 D	50	15		SR
	200	HIRA	44 NS	0450 E		200 D	35	30		HR
	221	ABST	44 NS	0500	0735	240	32			
	202	IZMI	44 NS	0700		300	40			
	127	TORN	44 NS	0720 E	1003.8	480 D	85			V=2
	260	ONDR	44 NS	0822 E		363 D	202	12		
	234	POTS	45 C	0710	0718.2	1.2	100	4		
	202	IZMI	5 S	0728	0728.5	1.2	350	136		
	8800	MANI	1 S	0836.5	0836.6	.2	9.4	4.7		
	2695	MANI	1 S	0836.5	0836.6	.2	4.4	1.4		
	4995	MANI	1 S	0836.5	0836.6	.2	4.8	2.4		
	686	MANI	1 S	0836.5	0836.6	.2	.9	.9		
	1415	MANI	1 S	0836.5	0836.6	.2	1.5	.8		
	3100	CRIM	24 R	0849	1232		13			
	3100	CRIM	1 S	0907	0908.5	3	4	1		
	234	POTS	2	1023	1023.2	1	175	2		
	202	IZMI	5 S	1023	1023.2	.5	1660	700		
	237	TRST	42 SER	1023	1023.2	1.6	1510			0
	808	ONDR	4 S/F	1046.8	1048.2	2.5	52	7		
	9100	GORK	20 GRF	1058.5	1130.9	54.2	21	6.5		
	3000	BERL	20	1110	1130.5	133	12			
	1470	BERL	20	1113	1152.5	56	4.8			
	9500	BERL	20	1113	1152.5	62	9.9			
	3100	CRIM	1 S	1129	1130	5	4	1		
	29	UPIC	2 S/F	1200.2	1200.4	.4				
	33	UPIC	2 S/F	1200	1200.3	.5				
	536	ONDR	8 S	1233	1233	.3	43			
	9100	ARCE	20 GRF	1421.8	1436.7	56				
	2800	OTTA	3 S	1434.9	1435	1	10.8	2.7		
	1420	ARCE	4 S/F	1435.6	1435.8	1.6				
	33	UPIC	4 S/F	1447.8	1447.8	.9				
	29	UPIC	8 S	1448.2	1448.4	1.1				
	33	UPIC	45 C	1455.9	1455.9	.9				
	29	UPIC	45 C	1456	1456.4	.8				
	2800	OTTA	20 GRF	1622	1632	70	4.8	2.4		
	2800	OTTA	22 GRF	1800	1810	40	3.2	2.2		
	4995	BOUL	1 S	1954.5	1955.5	3	15	5		
	2800	OTTA	3 S	1955.2	1956	7	28	6.8		
	1420	BOUL	3 S	1955	1956	9.5	24	8		
	2695	BOUL	3 S	1956.5	1957.5	2	53	18		
	100	HIRA	44 NS	2135 E		650 D	20	10		SR
	208	VORO	44 NS	2300 E	2312	360 D	55	35		
9	200	HIRA	44 NS	0017 E		480 D	70	50		HR
	221	ABST	44 NS	0500	0540.5	240	47			
	202	IZMI	44 NS	0700		300	135			
	127	TORN	44 NS	0720 E	1229.4	480 D	120			V=2
	260	ONDR	44 NS	0855 E		338 D	88	11		
	100	GORK	44 NS	1051 E		96		5		
	245	SGMR	44 NS	1220 E	1634.7	583 D	261			3,5,SWF
	410	SGMR	44 NS	1220 E	1906.8	583 D	18			3,5,SWF
	100	HIRA	44 NS	2135 E		650 D	60	40		SR
	200	HIRA	44 NS	2135 E		650 D	240	140		HR
	208	VORO	44 NS	2300 E	0100	360 D	105	70		
	8800	MANI	3 S	0021.2	0021.5	.7	35.7	23.8		
	4995	MANI	1 S	0021.2	0021.5	.5	5.6	2.7		
	500	HIRA	46 C	0330	0330.5	1	75	30		HR
	5730	IRKU	1 S	0335.8	0336	2	4			HR
	5730	IRKU	2 S	0340	0340.6	4	15			HR
	202	IZMI	5 S	0750	0750.5	1	280	106		
	113	POTS	45 C	0750.4	0750.8	1	280	50		
	234	POTS	6	0847.2	0853	26	150	1		
	3000	BERL	1	0916.3	0916.8	.7	3			
	9500	BERL	1	0916.5	0916.9	.7	2.8			
	1470	BERL	1	0917.5	0917.8	.5	1.6			

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FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	536	ONDR	3 S	0936.2	0936.2	.3	24			
	33	UPIC	4 S/F	0946.6	0947.1	1				
	113	POTS	45 C	0947	0947.3	.5	700	100		
	29	UPIC	4 S/F	0947.1	0947.4	.7				
	6100	KISV	21 GRF	0948	0951	27	4			
	9500	BERL	20	0948.5	0957	50	8.4			
	3000	BERL	22	0949	0951	46	8.2			
	9100	GORK	20 GRF	0949.7	0957.3	14.3	9.5	3.4		
	1470	BERL	22	0950	1006.7	25	2.7			
	202	IZMI	41 F	1104	1111	16	330			
	2650	DWIN	45 C	1105	1110	25	20	10		
	2950	GORK	21 GRF	1106	1119.1U	69	82			
	3100	CRIM	7 C	1109	1114	7	25	8		
	3100	CRIM	29 PBI	1109	1116	15	13			
	6100	KISV	21 GRF	1110	1115	25	5			
	1420	ARCE	20 GRF	1110.9	1111.5	29				
	3000	BERL	4	1110	1114.5	39	26			
	1470	BERL	20	1110	1120	25	2.5			
	9500	BERL	20	1110	1129	35	21			
	9100	ARCE	21 GRF	1111.4	1120.5	140				RECORDDISTURBED
	2950	GORK	4 S/F	1112.9	1114.4	2.1	36			
	9100	GORK	21 GRF	1113.4	1120.7	60.6	17	6.4		
	2650	DWIN	45 C	1148	1152	12	90	20		
	9100	ARCE	46 C/F	1148	1148.7	4				
	9100	ARCE		1148	1148.7	1.5				
	9100	ARCE		1149.5	1149.8	2.5				
	6100	KISV	46 C	1150	1157	15	11			
	536	ONDR	45 C	1150.8	1152.2	16	81	12		
	408	TRST	7 C	1151.2	1153	2.9	190 D			
	1420	ARCE	46 C/F	1152.2	1157.3	9.6				
	1420	ARCE		1152.2	1153.5	3.7				
	1420	ARCE		1155.9	1157.3	5.9				
	1420	ARCE	29 PBI	1201.8		60 D				RECORDDISTURBED
	9500	BERL	46	1152.5	1156.5	18	69			
	10500	BERN	4 S/F	1152.5	1153.9	2	45			OPR
	808	ONDR	45 C	1152.5	1157.3	9.5	48	30		
	9400	HUAN	1 S	1152.6	1154	1.4	55.8	13.7		L
	237	TRST	41 F	1152.7	1152.7	.3	920			3R
	9100	GORK	4 S/F	1152.7	1153	1.4	49	14.5		
	9100	ARCE	3 S	1152.7	1153.1	1.8				
	234	POTS	6	1152.7	1152.7	4.2	525	2		
	2950	GORK	45 C	1152.8	1153.5	7.2	30			
	2950	GORK		1152.8	1157 U		95			
	950	GORK	23 GRF	1152.8	1154	34.2	12			
	650	GORK	23 GRF	1152.8		33.2				
	1470	BERL	46	1152	1157.1	13	69			
	3000	BERL	46	1152	1156.2	13	99			
	3100	CRIM	7 C	1153	1153.5	7	18	6		
	3100	CRIM		1153	1157		128	43		
	10500	BERN	4 S/F	1154.7	1156.9	10	77			OPR
	408	TRST	7 C	1155.5	1157.4	4	200 D			
	9100	GORK	46 C	1156.2	1156.8	3.3	88			
	9100	GORK		1156.2	1158.8		17			
	237	TRST	41 F	1156.2	1156.7	.7	1040			D
	950	GORK	4 S/F	1156.4	1157.7	3.9	36			
	9100	ARCE	4 S/F	1156.4	1156.9	4.4				
	9400	HUAN	3 S	1156.6	1200.9	44.3	89.6	31.7		L
	650	GORK	46 C	1156.7	1156.7	2.5	72			
	650	GORK		1156.7	1158.8		64			
	260	ONDR	8 S	1157.8	1157.8	.4	202			
	9100	ARCE	40 F	1211.5	1227	22				
	127	TORN	25 R	1220 U	1226 U	6 U	30			
	808	ONDR	3 S	1223.7	1223.7	.3	18			
	1470	BERL	1	1223	1223.7	1	1.6			
	3000	BERL	22	1223	1226	12	5.9			
	3000	BERL	1	1310	1313.5	5.5	4.5			
	1420	ARCE	2 S/F	1312.3	1313.3	1.3				
	1420	ARCE	29 PBI	1313.6		30				
	1470	BERL	2	1312.5	1313.5	1.5	3.7			
	237	TRST	41 F	1313.2	1313.4	.4	4950			5R
	536	ONDR	8 S	1313.3	1313.3	.3	169			
	808	ONDR	2 S/F	1313	1313.4	2	32	4		
	536	ONDR	3 S	1318.2	1318.2	.2	31			
	2800	OTTA	23 GRF	1330	1500	190	10.2	5.1		
	3000	BERL	4	1359	1400.6	16	19			
	8800	SGHR	4 S/F	1400	1401	8	13.8	5.5		
	2695	SGHR	4 S/F	1400	1401.4	8	15.4	6.2		
	4995	SGHR	4 S/F	1400	1401.2	8	21.4	8.6		
	9400	HUAN	20 GRF	1400	1428.7	28.7	10.1	7.4		D
	1420	ARCE	1 S	1400.2	1400.6	2				
	2800	OTTA	3 S	1400	1408	4	12.2	6		
	1470	BERL	1	1400	1400.5	5	2.1			
	2650	DWIN	2 S	1400	1402	20	15	10		
	113	POTS	45 C	1405.2	1405.3	.4	550	100		
	113	POTS	45 C	1411.6	1411.7	.1	350	70		

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	2800	OTTA	3 S	1443.2	1445.8	3.8	19	7		
	2800	OTTA	29 PBI	1547	1547	10	5.2	2.6		
	4995	BOUL	8 S	1443.5	1445	3.5	21	7		
	4995	SGMR	3 S	1443.8	1445.5	3.2	21.7	8.7		
	2650	OWIN	1 S	1443	1445	4	20	5		
	2695	SGMR	3 S	1444	1446	10	22	8.8		
	9400	HUAN	21 GRF	1444.7	1554.8	110.1	16.9	13.7		R
	1420	ARCE	1 S	1454.9	1455.1	1.6				
	10500	BERN	4 S/F	1518.9	1520	15	19			OPR
	9400	HUAN	20 GRF	1519.8	1527.1	7.3	18.6	9.4		R
	410	SGMR	4 S/F	1558	1602.5	13.6	277	83.1		SWF
	2695	SGMR	4 S/F	1558.8	1602.1	11.1	85.7	25.7		SWF
	4995	SGMR	4 S/F	1559.5	1602	7.2	83.3	25		SWF
	606	SGMR	4 S/F	1600.2	1602.7	4.9	139	41.7		SWF
	10500	BERN	4 S/F	1600.3	1601.9	12	140			OPR
	1420	BOUL	3 S	1600.5	1601.5	5.5	34	11		
	245	SGMR	48 GB	1600.6	1605.2	7.5	11300	3390		SWF
	1420	ARCE	4 S/F	1600.9	1601.5	5				AT SUNSET
	2800	OTTA	4 S/F	1600	1602	10	66	16		
	4995	BOUL	8 S	1600	1601.5	8.5	24	25		
	2650	OWIN	45 C	1600	1602	5	50	20		SUNSET
	1415	SGMR	4 S/F	1601	1601.7	8.7	81.3	24.4		SWF
	15400	SGMR	4 S/F	1601	1601.8	3.5	133	39.9		SWF
	8800	SGMR	4 S/F	1601.1	1601.8	4.7	225	67.5		SWF
	9400	HUAN	45 C	1601.1	1605.9	4.8	153.8	61.9		L
	9100	ARCE	4 S/F	1601.4	1602.1	4.6				RECORDDISTURBED
	2695	BOUL	3 S	1602	1602.5	4	78	26		
	1420	BCUL	1 S	1611	1612	2.5	4	1		
	2800	OTTA	20 GRF	1640	1647	16	1.8	1		
	2800	OTTA	1 S	1802	1807	8	3	1.2		
	18	HCMA	6 S	1813	1814	2			1	
	2800	OTTA	21 GRF	1820	1834	40	11			
	2695	SGMR	20 GRF	1823.5	1827.6	30.1	25.5	7.7		SWF
	4995	SGMR	20 GRF	1823.5	1827.5	34	23.8	7.1		SWF
	4995	BOUL	1 S	1824.5	1827	9	26	9		
	8800	SGMR	28 GRF	1824.9	1828.5	33.1	13.1	3.9		SWF
	2800	OTTA	3 S	1826	1827.5	6	17.4	6		
	2695	BOUL	1 S	1827	1828	4	14	5		
	4995	BCUL	45 C	1915	1916.5	3.5	33	11		
	2800	OTTA	21 GRF	1922	1932	20	6	3		
	2695	SGMR	3 S	1926.4	1928.6	6.1	13.1	3.9		
	2800	OTTA	4 S/F	1927.5	1928.9	3	10	4		
	1420	BCUL	8 S	1927.5	1928.5	2	4	1		
	4995	SGMR	1 S	1927.5	1927.9	4.9	5.9	1.8		
	4995	BCUL	1 S	1955	1957	2.5	10	3		
	4995	SGMR	3 S	2012.5	2105	11.5	38.1	11.4		SWF
	4995	BOUL	23 GRF	2101.5	2104	23.5	39	10		
	2695	SGMR	20 GRF	2101.8	2105.1	11.6	8.4	2.5		SWF
	2800	OTTA	1A S	2102	2106	10	5	2.5		
	8800	SGMR	3 S	2103.3	2104.7	6.7	16.7	5		SWF
	2800	OTTA	1 S	2104.6	2105	1	3.2	1.6		
	2695	PENT	240 R	2145	2203	18	11	3		
	4995	BOUL	45 C	2156	2200.5	12.5	18	6		
	4995	BOUL	45 C	2237	2238.5	4.5	19	6		
	2695	PENT	28 PRE	2238	2241	8.5	5.6			
	2695	PENT	3 S	2246.5	2251	16.5	79	24.6		
	2695	PENT	29 PBI	2303	2303	40	9	4.5		
	4995	BCUL	45 C	2245.5	2250	31	60	15		
	2695	BCUL	2 SF	2248	2252	7	53	18		
	1420	BOUL	3 S	2248	2250.5	7	8	3		
	4995	MANI	3 S	2250.3	2250.9	2.7	41.7	27.8		
	2695	MANI	3 S	2250.3	2251	2.6	32.8	21.9		
10	500	HIRA	46 C	0043	0053	25	40	15		SL
	200	HIRA	46 C	0044	0044	1	6000	2000		NR
	2695	MANI	3 S	0044.3	0044.7	.9	13.1	8.8		
	8800	MANI	8 S	0044.3	0044.7	.7	132.6	88.4		I
	1415	MANI	3 S	0044.3	0044.6	.9	16.1	10.4		
	4995	MANI	3 S	0044.3	0044.7	.8	66.7	44.5		
	606	MANI	3 S	0044.3	0044.6	1.1	15.1	10.1		
	100	HIRA	46 C	0044	0044.6	4	100000	5000		0
	100	HIRA	46 C	0051	0104	33	350	90		SR
	500	HIRA	27 RF	0312	0353	170	50	10		SL
	100	HIRA	46 C	0333	0334	3	10000	700		0
	221	ABST	44 NS	0500	0532.5	240	21			
	200	GORK	44 NS	0600 E		360		30		
	100	GORK	44 NS	0600 E		360		10		
	202	IZMI	44 NS	0700		300	26			
	127	TORN	44 NS	0720 E	1106.4	480 D	210			V=2
	260	ONDR	44 NS	0810 E		385 D	52	6		
	410	SGMR	44 NS	1152 E	2130.9	612 D	130			3.5,CONT,
	245	SGMR	44 NS	1152 E	2130.4	612 D	608			SWF
	606	SGMR	43 NS	1758.6	2130.6	245.4D	139			
	100	HIRA	44 NS	2135 E	0350	650 D	200	85		SR
	200	HIRA	44 NS	2135 E		650 D	200	140		SR

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FEB 1978	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	208	VORO	44	NS	2300 E	0050	360 D	100	74		
	650	GORK	20	GRF	0558 E	0600.8	120.3	12.5	6		
	606	MANI	3	S	0606.8	0607.1	.4	52.9	25.2		
	1415	MANI	1	S	0607	0607.1	.2	1.7	.8		
	221	ABST	45	C	0715	0720	5	41			
	6100	KISV	23	GRF	0755	0757	35	1			
	202	IZMI	41	F	0755.5	0806	15	460			
	237	TRST	42	SER	0755.6	0756.7	1.3	840			9R
	234	POTS	2		0755.7	0758	2.6	580	4		
	237	TRST	41	F	0757.9	0757.9	.1	1210			6R
	113	POTS	45	C	0805.8	0806.2	.9	3500	175		
	536	ONDR	27	RF	0930	1014	110	35	16		
	650	GORK	20	GRF	0942.9	0954.6	16.1	6	3		
	650	GORK	20	GRF	1009.8	1026.8	51.2	95	4.5		
	29	UPIC	46	C	1121.6	1122	3.2				
	33	UPIC	46	C	1121.7	1122.9	3.8				
	6100	KISV	3	S	1124	1125	6	5			
	113	POTS	45	C	1444.3	1444.4	.3	250	50		
	237	TRST	41	F	1444.4	1444.4	.3	448			10R
	930	BORD	8	S	1504	1504.1	.2	23	1		
	2800	OTTA	1	S	1656	1657	4	3	1.5		
	4995	BOUL	45	C	1701.5	1710	12	23	8		
	4995	SGMR	22	GRF	1701.7	1745.7	60.4	33.6	13.4		5,SWF
	2695	PENT	24	R	1704	1714.5	10.5	6.4	2.1		
	2800	OTTA	27A	RF	1704		61	6.4	5.2		
	2695	PENT	1	S	1705	1706	2	2.4	1.2		
	8800	SGMR	22	GRF	1709.6	1745.3	50.3	37.3	14.9		5,SWF
	2695	SGMR	22	GRF	1713.2	1745.7	47	17.6	7.4		5,SWF
	2800	OTTA	24P	R	1714.5		36.5	6.4			
	9400	HUAN	41	F	1719.1	1800	80.9	16.7	8.2		L
	2800	OTTA	1	S	1719	1721	5	5	2.4		
	2800	OTTA	1	S	1725	1728	6	3	2.5		
	15400	SGMR	22	GRF	1730.9	1744.8	28.7	22.1	8.8		5,SWF
	410	SGMR	47	GB	1733.4	1745.8	15	617	185		5,SWF
	2800	OTTA	1	S	1734.2	1736.7	5	3.4	1.7		
	606	SGMR	47	GB	1734.9	1745.7	23.7	606	182		5,SWF
	245	SGMR	49	GB	1737.6	1741	16.3	3970	1191		5,SWF
	1415	SGMR	4	S/F	1740.8	1745.3	17.9	51.8	15.5		5,SWF
	4995	BOUL	45	C	1740	1745	6.5	18	6		
	1420	BCUL	45	C	1740	1745.5	21.5	18	6		
	9400	HUAN	1	S	1741.3	1742.4	1.1	15	6.1		D
	2800	OTTA	45	C	1741	1746	6	12.6	5		
	2695	BOUL	45	C	1742.5	1743	5	21	7		
	9400	HUAN	2	S/F	1744.8	1746.5	1.7	20	10		L
	2800	OTTA	26	FAL	1751	1805	14	-6.4	-2.1		
	4995	BOUL	3	S	1912	1915	5.5	11	4		
	4995	BOUL	3	S	1924	1925.5	5	10	3		
	4995	BOUL	8	S	1948	1950.5	3.5	15	5		
	1420	BCUL	8	S	1949.5	1950.5	3.5	4	1		
	9400	HUAN	1	S	2007.8	2010	2.2	16.7	7.2		R
	2695	SGMR	20	GRF	2103	2111.6	34.3	57.5	23		
	2800	OTTA	21	GRF	2106	2124	120 D	17			
	4995	SGMR	20	GRF	2109	2115.4	23.3	23.6	9.4		
	1415	SGMR	20	GRF	2109.7	2112.7	29	17.9	7.2		
	8800	SGMR	20	GRF	2109.8	2117.1	19	32.7	13.1		
	9400	HUAN	22	GRF	2110	2200.5	90.5	53.4	25.6		R
	2800	OTTA	4	S/F	2110.5	2111.6	4	41	10		
	1420	BOUL	40	F	2110	2101.5	28	14	5		
	4995	BCUL	45	C	2126.5	2130	9.5	18	6		
	2800	OTTA	45	C	2128	2128.8	4	13	3.2		
	2800	OTTA	3	S	2134	2136.3	4	10	2.5		
	4995	BCUL	3	S	2201	2202	4	10	3		
11	2930	VORO	3	S	0105	0108	5	11			
	2930	VORO	3	S	0317	0322	8	24			
	500	HIRA	46	C	0318.7		3		80		
	500	HIRA			0318.7	0320.2		170			HR
	500	HIRA			0318.7	0321.2		220			D
	208	VORO	47	GB	0318	0320	4	280			
	4995	MANI	3	S	0319.2	0320.4	5.5	69.2	46.1		
	1415	MANI	3	S	0319.2	0319.9	3.8	48.5	32.3		
	606	MANI	3	S	0319.3	0320	2.4	73.1	48.7		
	2695	MANI	3	S	0319.3	0319.9	3.3	44.4	29.6		
	8800	MANI	3	S	0319.5	0321.2	3.1	63.6	42.4		
	200	HIRA	46	C	0319.5	0320	1	1500	500		IG
	100	HIRA	46	C	0319	0319.8	3.5	10000	2000		HR
	5730	IRKU	45	C	0319	0320.3	7	70	14		D
	5730	IRKU			0319	0321.3		45			WL
	200	GORK	44	NS	0600 E		360		30		WL
	100	GORK	44	NS	0600 E		360		300		
	127	TORN	44	NS	0630 E	0732.6	530 D	130			V=1
	202	IZMI	44	NS	0700		300	55			
	33	UPIC	43	NS	0752.4	1427.3	398.4				
	29	UPIC	43	NS	0752.5	1233.1	398.9				
	260	ONDR	44	NS	0917 E		334 D	115	7		

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FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	245	SGMR	44 NS	1150 E	2140	615 D	1191			
	410	SGMR	44 NS	1150 E	2144	615 D	123			
	536	ONDR	43 NS	1204		156	10	4		
	100	HIRA	44 NS	2135 E	2320	650 D	300	180		SR
	200	HIRA	44 NS	2135 E		650 D	240	120		MR
	208	VORO	44 NS	2300 E	2313	360 D	190	80		
	15000	KISV	28 GRF	0715	0718	7	5			
	113	POTS	6	0749.5	0820.3	33	840000			
	6100	KISV	45 C	0750	0755	10	16			
	5730	IRKU	45 C	0751	0753.5	8.5	44	10		HL
	5730	IRKU		0751	0755		17			HL
	5730	IRKU		0751	0757		12			HL
	9500	BERL	4	0751	0753	9	43			
	3100	CRIM	3 S	0752	0754	10	19	6		
	10500	BERN	4 S/F	0752	0753.1	6	43			OPR
	650	GORK	22 GRF	0752.2	0755.2	13.8	54	6		
	200	GORK	47 GB	0752.3	0756.5	7	2800			
	33	UPIC	46 C	0752.4	0756.6	5.8				
	29	UPIC	46 C	0752.5	0756.9	5.7				
	127	TORN	49 GB	0752.5	0753.7	28.5	2000			SERIES
	127	TORN		0752.5	0805.3		460			
	127	TORN		0752.5	0814.7		430			
	127	TORN		0752.5	0820		640			
	237	TRST	41 F	0752.5	0752.8	1.1	1650			24R
	9100	GORK	4 S/F	0752.5	0753.4	6.2	83	8.8		
	234	POTS	6	0752.5	0752.8	28	1500	1		
	1470	BERL	4	0752.5	0753.5	7.5	14			
	3000	BERL	4	0752.5	0753.5	7.5	24			
	950	GORK	4 S/F	0752.7	0755.3	7.1	16	8		
	4995	MANI	3 S	0752.8	0753.4	3.1	39.9	26.6		
	1415	MANI	3 S	0753	0753.6	6.5	12.6	8.4		
	8800	MANI	3 S	0753	0753.3	3.6	79.5	53		IG
	2695	MANI	3 S	0753.1	0753.4	2.4	20.9	13.9		
	237	TRST	41 F	0755.2	0755.2	.2	2350			16R
	100	GORK	47 GB	0756.4	0756.7	1	54000			
	202	IZMI	41 F	0757	0758.2	5	1100			
	100	GORK	47 GB	0805.1	0805.7	1.2	54000			
	100	GORK		0805.1	0806		43000			
	9100	GORK	41 F	0806	0806.9	5	9			
	9100	GORK		0806	0810.5		10			
	6100	KISV	45 C	0810	0815	20	14			
	650	GORK	41 F	0813.4	0814.7	12.4	48			
	650	GORK		0813.4	0820.1		120			
	10500	BERN	3 S	0813.7	0814.5	11	35			OPR
	10500	BERN	4 S/F	0813.7	0820.2		188			
	3100	CRIM	7 C	0814	0820	17	66	22		
	9100	GORK	46 C	0814.2	0815	11.3	67			
	9100	GORK		0814.2	0820.6		294			
	950	GORK	21 GRF	0814.2	0814.6	15.7	15	5.2		
	228	HARS	47 GB	0814.2	0819.5	10	270	90		
	228	HARS		0814.2	0814.7		160			
	228	HARS		0814.2	0817.5	.3	140			
	228	HARS		0814.2	0818	.3	250			
	4995	MANI	3 S	0814.4	0814.7	1.7	85.1	56.7		
	8800	MANI	3 S	0814.4	0814.7	1.5	53	35.3		IG
	2695	MANI	3 S	0814.5	0815	1.4	23.5.	15.7		
	9100	ARCE	28 PRE	0814.5	0814.7	4.5				RECORDDISTURBED
	9100	ARCE	4 S/F	0819	0820.5	6				
	1415	MANI	3 S	0814.5	0814.7	1.4	14.5	9.7		
	606	MANI	3 S	0814.5	0814.8	.7	25.2	17.6		
	237	TRST	41 F	0814.5	0814.7	.4	370			18R
	1470	BERL	46	0814	0820.6	11	31	7.8		
	1420	ARCE	28 PRE	0814	0814.3	5.1				
	1420	ARCE	4 S/F	0819.1	0820.4	5				
	1420	ARCE	29 PBI	0824.1		36 D				
	9500	BERL	46	0814	0820.1	16	175	34		
	3000	BERL	46	0814	0820.4	8.5	60	16		
	200	GORK	47 GB	0815	0817.7	7.5	800			
	202	IZMI	41 F	0815	0820	12	500			
	237	TRST	42 SER	0817	0817.8	3.2	510			18R
	950	GORK	3 S	0819.4	0820.3	3	33	16		
	8800	MANI	3 S	0819.7	0820.5	3.7	238.5	159		
	4995	MANI	3 S	0819.7	0820.5	3.7	138.3	92.2		
	606	MANI	3 S	0819.7	0820.2	1.4	40.3	26.9		
	1415	MANI	3 S	0820	0820.7	3.4	38.8	25.9		
	2695	MANI	3 S	0820	0820.5	3.4	39.2	26.1		
	2650	OWIN	45 C	0824	0830	11	35	10		
	6100	KISV	3 S	1017	1018	5	3			
	6100	KISV	3 S	1131	1135	9	4			
	1420	ARCE	2 S/F	1156.7	1158	1				DUBIOUS TIME
	6100	KISV	3 S	1157	1158	7	8			
	113	POTS	6	1157.3	1158.2	5.8	90000			
	3000	BERL	4	1157.6	1158	2.4	7.3			
	1470	BERL	1	1157.8	1158.2	1.2	2.6			
	9500	BERL	2	1157.8	1158	1.2	7.1			

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FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	33	UPIC	4 S/F	1157.8	1158.1	2.2				
	9400	HUAN	1 S	1157.9	1159.7	1.8	13.4	1.9		O
	29	UPIC	4 S/F	1157.9	1158.4	2.1				
	127	TORN	47 GB	1157 U	1158.4	2 U	1400			
	9100	GORK	1 S	1158.1	1158.3	.7	11.5	5		
	9100	ARCE	1 S	1158	1158.4	1.5				
	1470	BERL	2	1202.5	1203	1.5	1.5			
	408	TRST	7 C	1202.6	1203.1	1	52			
	234	POTS	45 C	1203	1203.2	1.2	220	5		
	9500	BERL	4	1231.3	1231.5	3.7	14			
	1420	ARCE	1 S	1231.4	1231.7	1.6				DUBIOUS TIME
	10500	BERN	4 S/F	1231.7	1232.3	3	20			OPR
	9400	HUAN	4 S/F	1232	1237.8	5.8	31.7	8.7		L
	29	UPIC	4 S/F	1232.1	1233.1	2.9				
	33	UPIC	4 S/F	1232.1	1233	2.5				
	8800	SGMR	3 S	1232.1	1232.4	1.4	39	15.6		
	9100	ARCE	3 S	1232.1	1232.4	1.8				
	1415	SGMR	1 S	1232.1	1232.6	1.6	9.6	3.8		
	4995	SGMR	3 S	1232.2	1232.5	3.8	43.4	17.4		
	113	POTS	4	1232.3	1232.5	5.9	1700			
	2695	SGMR	3 S	1232.3	1232.5	2.7	34.5	13.8		
	1470	BERL	2	1232	1232.5	1	2.6			
	3000	BERL	4	1232	1232.4	1	7.9			
	2650	DWIN	2 S	1237	1238	3	8	5		
	113	POTS	6	1308	1310.2	3.4	1700			
	234	POTS	6	1312.3	1316	3.8	175	1		
	237	TRST	41 F	1315.9	1316	.4	550			SR
	2800	OTTA	21 GRF	1350		120	6.2			
	234	POTS	45 C	1416.1	1416.2	.2	125	15		
	127	TORN	47 GB	1423.5	1427	6.5U	570 D	200 U		SATURATED
	930	BORD	46 C	1423	1424.2	7	720	20		
	2800	OTTA	3 S	1424.5	1427.3	9	106	21		
	113	POTS	45 C	1424.5	1427.2	7.2	700000	1400		
	228	HARS	45 C	1424.5	1425.1	2	120	50		
	29	UPIC	46 C	1424.6	1427.6	6.8				
	33	UPIC	46 C	1424.6	1427.3	6.2				
	9400	HUAN	45 C	1424.7	1428	3.3	409.2	147.1		L
	9400	HUAN	30 PBI	1428	1442.7	14.7	100.2	33.2		L
	4995	SGMR	47 GB	1425	1427.4	7	510	204		
	10500	BERN	45 C	1425	1427.2	25	301			OPR
	234	POTS	45 C	1425.2	1427.4	4	2400	240		
	536	ONDR	4 S/F	1425.5	1426	3.5	156	98		
	260	ONDR	4 S/F	1425.5		3	189	158		
	4995	BCUL	8 S	1425	1427.5	5.5	292	97		
	9100	ARCE	4 S/F	1425	1427.4	4.8				
	9100	ARCE	29 PBI	1429.8		34				
	2695	SGMR	3 S	1426	1427.5	6	117	46.9		
	228	HARS	47 GB	1426.2	1427.2	3.7	1600	700		
	806	ONDR	4 S/F	1426.3	1426.8	3.5	596	64		
	237	TRST	47 GB	1426.5	1427.3	2.7	6710			7R
	8800	SGMR	3 S	1426.5	1427.5	4.5	445	17.8		
	15400	SGMR	47 GB	1426.5	1427	2.5	883	353		
	245	SGMR	48 GB	1426.5	1427.6	4.9	6800	2720		
	410	SGMR	48 GB	1426.5	1427.5	4.5	512	237		
	606	SGMR	3 S	1426.6	1427.4	5.9	461	184		
	1415	SGMR	3 S	1426.7	1427.5	6.3	242	96.6		
	9500	BERL	4	1426	1426.6	9	266	71		
	1470	BERL	4	1426	1427.3	7	269			
	3000	BERL	4	1426	1427	6	107	44		
	18	MCMA	6 S	1428	1430	5			2	
	2650	DWIN	2 S	1430	1433	10	95	38		
	237	TRST	41 F	1457.7	1457.7	.2	2200			1R
	4995	BOUL	3 S	1618.5	1621	5	6	2		
	2695	PENT	240AR	1650	1720	20	2.8	1.4		
	9400	HUAN	21 GRF	1659.4	1714.3	54.9	16.7	8		R
	8800	SGMR	3 S	1659.9	1709	15.1	37.7	15.1		
	4995	SGMR	3 S	1700	1709.1	15	32.2	12.9		
	2695	SGMR	20 GRF	1701	1709	14	4	1.6		
	4995	BCUL	8 S	1702.5	1703.5	2.5	17	6		
	9400	HUAN	8 S	1704.2	1704.9	.7	28	8.1		R
	2695	PENT	1 S	1704	1704.5	2.5	2.2	1.1		
	18	MCMA	6 S	1917	1920	3			2	
	2800	OTTA	23 GRF	1920	1955	225	10.4	5.2		
	2800	OTTA	40 F	1924.5	1929.7	7	3			
	1420	BOUL	8 S	1928.5	1929.5	2	7	2		
	18	MCMA	6 S	1929	1931	5			2	
	9400	HUAN	24 R	1936.5	2206.6	270.1	31.7	15.1		O
	1420	BOUL	8 S	2057.5	2058	2.5	3	1		
	4995	SGMR	1 S	2120.4	2120.9	.9	9.3	3.7		
	2695	PENT	22 GRF	2135	2148	19	5.4	3		
	500	HIRA	24 R	2135 E	2348	390 D	30	20		WR
	1420	BCUL	8 S	2143	2143.5	2	6	2		
	2695	PENT	21 GRF	2155	2159	15	2.8	1.4		
	100	HIRA	46 C	2155	2155.2	3	20000	2000		WR
	2695	PENT	1 S	2157	2157.5	1	3.2	1.6		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

FEBRUARY 1978

FEB DAY	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	1420	BCUL	45	C	2224	2224.5	3	5	2		
	2695	PENT	1	S	2235.8	2237.5	5	2.8	1.4		
	606	MANI	3	S	2335.5	2336.1	.8	31.7	16.4		
	1415	MANI	1	S	2335.7	2335.8	.6	2.4	.8		
	4995	MANI	20	GRF	2340 U	2354 U	19 D	14.2	7		
	1415	MANI	20	GRF	2344.5	2354 U	14.5D	4.9	2		
	2695	MANI	20	GRF	2344.5	2355 U	14.5D	12.6	6		
	606	MANI	20	GRF	2345	2354 U	14 D	4.1	2		
12	2695	MANI	3	S	0137.7	0138.3	1.3	10.1	6.7		IG
	1415	MANI	3	S	0137.7	0138.2	1.6	30.9	20.6		
	606	MANI	3	S	0137.7	0142.9	5.8	34.8	23.2		
	1415	MANI	3	S	0402.1	0402.2	.2	21.2	14.1		
	4995	MANI	3	S	0402.2	0402.5	.7	19	12.7		IG
	606	MANI	1	S	0402.3	0402.4	.3	5.8	3.8		
	221	ABST	44	NS	0500	0644	240	10			
	100	GORK	44	NS	0556 E		384		150		
	200	GORK	44	NS	0600 E		360		50		
	127	TORN	44	NS	0630 E	1358	530 D				V=1
	202	IZMI	44	NS	0700		300	235			
	260	ONDR	44	NS	0750 E		420 D	219	17		
	536	ONDR	43	NS	0900		350	65			
	9500	BERL	43	NS	1102	1103	71	25			
	3000	BERL	43	NS	1102	1103	58	20			
	1470	BERL	43	NS	1111	1133.5	55	5.1			
	245	SGMR	44	NS	1149 E	1928.5	618 D	1587			SNF
	410	SGMR	44	NS	1149 E	2127.2	618 D	345			3,CONT,
	1470	BERL	43	NS	1306.5	1308.8	18	21			
	3000	BERL	43	NS	1307	1308.5	15	82			
	200	HIRA	44	NS	2135 E		450 D	90	55		MR
	100	HIRA	44	NS	2135 E		650 D	200	150		SR
	200	VORO	44	NS	2300 E	0420	360 D	100	50		
	1415	MANI	1	S	0522.9	0523	.3	9.7	6.8		
	4995	MANI	1	S	0523	0523.1	.2	5.4	2.7		
	8800	MANI	3	S	0523	0523.1	.2	10.8	5.4		IG
	100	HIRA	46	C	0523	0523.5	3	3000	400		MR
	650	GORK	20	GRF	0558 E	0632.1	102.1	16	8		
	202	IZMI	45	C	0735	0735.5	2	1545	650		
	6100	KISV	3	S	0922	0922.2	1	4			
	9100	GORK	1	S	0922.4	0922.5	.4	14	7		
	1470	BERL	4		0926	0926.2	.5	7			
	930	BORD	46	C	0937.7	0938.8	3.3	110	7		
	950	GORK	2	S/F	0939.5	0942.9	6.9	32			
	9100	ARCE	22	GRF	0940	0943.6	11				
	6100	KISV	45	C	0941	0943.5	4	3			
	15000	KISV	3	S	0941	0942	4	13			
	1420	ARCE	40	F	0941.4	0943.4	8				
	1470	BERL	4		0941.5	0943.4	6.5	7.5			
	808	ONDR	4	S/F	0941.5	0943	3	70	12		
	9100	GORK	46	C	0941.6	0942.1	3.1	19			
	9100	GORK			0941.6	0943.4		17			
	9500	BERL	2		0941	0942	3	6.9			
	2950	GORK	1	S	0943	0943.5	1.4	12.7	6		
	3000	BERL	4		0943	0943.4	1.5	10			
	650	GORK	4	S/F	0945	0945.7	6	55	6.5		
	29	UPIC	3	S	0945.3	0945.5	.4				
	33	UPIC	3	S	0945.5	0945.5	.3				
	6100	KISV	3	S	1008	1009	3	4			
	650	GORK	2	S/F	1028	1031.4	4.4	10			
	202	IZMI	41	F	1048	1124.2	47	845			
	200	GORK	27	RF	1049	1127	71	180			
	10500	BERN	24	R	1101.7	1103.2	2	28			OPR
	3100	CRIM	3	S	1102	1104	16	10	3		
	9100	GORK	21	GRF	1102.1	1133.5	58.6	36.5	18		
	9100	GORK	4	S/F	1102.4	1103.4	1.9	51			
	2950	GORK	4	S/F	1102.5	1103.4	1.3	28	14		
	10500	BERN	-8	S	1127	1128.2	3	15			OPR
	9100	GORK	1	S	1127.9	1128.6	1.4	24.6	12.3		
	1420	ARCE	2	S/F	1127.9	1128.2	1.7				
	950	GORK	1	S	1128	1128.4	.9	4.3	2.1		
	2950	GORK	3	S	1128	1130.4	1.3	19.6	9		
	9100	ARCE	2	S/F	1128.1	1128.4	2.3				
	2650	DWIN	45	C	1128		1	80	10		
	200	GORK	45	C	1130.5	1131	1.4	730	360		
	408	TRST	7	C	1132.5	1133.2	1.5	100 D			
	1420	ARCE	1	S	1132.8	1133.5	2				
	202	IZMI	21	GRF	1149.2	1152	5.3	630	200		
	29	UPIC	4	S/F	1151.7	1152.6	1.9				
	33	UPIC	4	S/F	1151.8	1152.2	1.6				
	113	POTS	45	C	1157.4	1158.7	2.3	1700	200		
	9400	HUAN	20	GRF	1217.4	1222.7	5.3	15.5	8		R
	9100	ARCE	20	GRF	1217.7	1219.9	26				
	234	POTS	6		1303.6	1307.2	37	120	1		
	930	BORD	46	C	1303	1304.8	3	40	3		
	113	POTS	4		1304.2	1314.7	28	1400	3		

SOLAR RADIO EMISSION
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FEB 1978	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	33	UPIC	46	C	1304.7	1307.2	26.3				
	29	UPIC	46	C	1304	1307.5	26.8				
	10500	BERN	8	S	1306.5	1308.8	4.5	135			OPR
	1420	ARCE	28	PRE	1306.5	1307.2	1.9				
	1420	ARCE	4	S/F	1308.4	1308.6	1.3				
	1420	ARCE	29	PBI	1309.7		20				
	9400	HUAN	1	S	1306.8	1307.7	.9	20.7	8.6		L
	808	ONDR	45	C	1306.8	1306.8	10	60	15		
	9100	ARCE	28	PRE	1306.9	1307.4	1.6				
	9100	ARCE	3	S	1308.5	1309	1.5				
	9100	ARCE	29	PBI	1310		55				
	4995	SGMR	3	S	1307	1308.6	2.2	152	60.8		3,CONT
	8800	SGMR	3	S	1307	1308.6	2.1	140	56.2		3,CONT
	2695	SGMR	3	S	1307.1	1308.6	2.2	69	27.6		3,CONT
	1415	SGMR	3	S	1307.1	1308.6	2	34.1	13.6		3,CONT
	606	SGMR	3	S	1307.1	1308.7	2.3	70.5	28.2		3,CONT
	2650	DWIN	45	C	1307	1309	3	55	10		
	9500	BERL	4		1307	1308.7	4.5	80			
	9400	HUAN	8	S	1308.6	1309.9	1.3	119	46.9		L
	930	BORC	41	F	1309	1312.2	4	23	2		
	127	TORN	46	C	1313	1315.2.	17.5	520			
	127	TORN			1313	1330.1		1100			
	930	BORC	46	C	1527.9	1528.3	.5	54	3		
	2800	OTTA	8	S	1532	1532.2	.5	2.6	1.3		
	8800	SGMR	1	S	1602.8	1603.2	1.2	9.9	4		CONT
	4995	SGMR	3	S	1603	1603.5	4.5	30.7	12.3		CONT
	1415	SGMR	1	S	1603	1603.5	2	6.5	2.6		CONT
	2695	SGMR	3	S	1603.1	1603.8	4.9	11.3	4.5		CONT
	606	SGMR	3	S	1603.2	1603.3	.8	183	73.3		CONT
	2800	OTTA	1	S	1603	1603.5	3	9.4	4.5		
	9400	HUAN	41	F	1820.5	2033.4	212.9	50	17.9		R
	2800	OTTA	20	GRF	1829	1831	17	3.2	1.8		
	9400	HUAN	4	S/F	1846.3	1858.9	12.6	39.7	14.1		D
	2800	OTTA	4	S/F	1848.2	1849.1	8	27	7		
	15400	SGMR	3	S	1848.9	1849.7	2.1	16.8	6.7		CONT,SWF
	1415	SGMR	3	S	1849	1849.3	1	14.3	5.7		CONT,SWF
	4995	SGMR	3	S	1849.1	1849.2	1.5	26.1	15		CONT,SWF
	8800	SGMR	3	S	1849.1	1850.1	1.4	37.2	26.8		CONT,SWF
	2695	SGMR	3	S	1849.1	1849.2	1.1	32.5	14.5		CONT,SWF
	2800	OTTA	23	GRF	1857	1929	288	16.2			
	9400	HUAN	20	GRF	1902.4	1914.7	12.3	27.6	12.6		R
13	200	HIRA	27	RF	0110	0152	135	300	100		MR
	500	HIRA	27	RF	0115	0201	95	240	150		MR
	2930	VORO	47	GB	0115	0207	100	213			
	208	VORO	27	RF	0116	0153	129	170	100		
	100	HIRA	27	RF	0128	0200	240	1000	500		D
	2695	MANI	47	GB	0135 E	0205.5	60 D	737.1	491.4		
	8800	MANI	3	S	0135 E	0202	60 D	317.3	212		NT
	1415	MANI	3	S	0135 E	0205 U	60 D	474	316		
	4995	MANI	3	S	0135 E	0202.5	60 D	408	272		
	606	MANI	3	S	0135 E	0208.7	60 D	288.6	192		
	5730	IRKU	49	GB	0158 U	0201.7	53 D	370			WL
	35000	NAGO	22	GRF	0201	0310	150	45			
	100	HIRA	46	C	0409.7	0410	2.5	10000	2000		WL
	500	HIRA	24	R	0442 E	0519	200 D	150	30		SL
	221	ABST	44	NS	0500	0625	240	12			
	100	GORK	44	NS	0530 E		450		300		
	127	TORN	44	NS	0630 E		430 D				INCOMPLETE
	202	IZMI	44	NS	0700		300	55			
	29	UPIC	43	NS	0749.7	0841.2	415.5				
	33	UPIC	43	NS	0750.7	0841	415.6U				
	260	ONDR	44	NS	0820 E		370 D	145	10		
	536	ONDR	44	NS	0820 E		370 D	31			
	410	SGMR	44	NS	1148 E	1736.5	620 D	70.4			3G,CONT,
	245	SGMR	44	NS	1148 E	1948	620 D	318			SWF
	100	HIRA	44	NS	2125 E	0510	660 D	700	480		MR
	208	VORO	44	NS	2300 E	0328	360 D	73	46		
	35000	NAGO	20	GRF	0510	0535	60	19			
	950	GORK	23	GRF	0533 E	0550.2U	234	34			
	650	GORK	22	GRF	0533 E	0550.2	192.4	53			
	3100	CRIM	26	FAL	0630	0901		5			
	9100	GORK	20	GRF	0648.7	0826.8	138	30	10		
	113	POTS	6		0802.5	0841	39	5000	1		
	3100	CRIM	1	S	0802.5	0803.5	3	3	1		
	1420	ARCE	1	S	0802.6	0802.9	1.6				RECORDDISTURBED
	3000	BERL	22		0817.5	0823	28	12			
	9500	BERL	20		0817.5	0827	28	9.8			
	3100	CRIM	45	C	0818	0821	23	11	4		
	3100	CRIM			0818	0827		13			
	202	IZMI	41	F	0819	0823	7	600			
	234	POTS	6		0819.5	0834.6	22	650	1		
	2950	GORK	3	S	0819.7	0821	3.4	30	13		
	1420	ARCE	40	F	0819.7	0820.3	9.6				
	237	TRST	41	F	0819.8	0819.9	.2	225			BL

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FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	950	GORK	1 S	0819.9	0821.1	2.1	9.2			
	3000	BERL	4	0820	0820.5	2.5	19			
	200	GORK	46 C	0822	0822.7	1.5	740			
	606	MANI	3 S	0824	0827.3	4	28	15.6		
	1420	BERL	22	0825 E	0840.8D	20	4.9			
	180	GORK	41 F	0826.4	0826.6	14.4	6600			
	180	GORK		0826.4	0835.5		7300			
	108	GORK		0826.4	0841		7300			
	3000	BERL	4	0826.4	0826.7	1.1	23			
	2950	GORK	3 S	0826.5	0826.8	.9	27	13		
	2695	MANI	3 S	0826.5	0826.9	1	35.1	20.5		
	1415	MANI	1 S	0826.6	0826.9	.9	1.2	.6		
	4995	MANI	3 S	0826.6	0827	.9	16.3	10.8		
	8800	MANI	1 S	0826.8	0827	.3	5.7	2.8		IG
	1420	BERL	4	0826	0826.7	1.5	9.9			
	200	GORK	46 C	0833.1	0833.8	2	720			
	202	IZMI	41 F	0834	0835	2	1400			
	950	GORK	1 S	0834.1	0834.8	.8	3.7			
	1420	BERL	4	0834.5	0834.9	.5	15			
	2950	GORK	1 S	0834.6	0834.7	.5	8.5	4		
	15000	KISV	20 GRF	0933	0938	9	6			
	950	GORK	21 GRF	1007.2	1031.5	86.3	8.8			
	9100	GORK	21 GRF	1036.2	1038.5	7.2	9.5	4		
	6100	KISV	3 S	1037	1038	5	3			
	3000	BERL	4	1037	1037.7	2	22			
	10500	BERN	3 S	1037.4	1037.7	2.5	14			OPR
	9100	GORK	2 S/F	1037.6	1037.8	.9	21.4	10		
	9100	ARCE	2 S/F	1037.6	1037.9	4.6				RECORDDISTURBED
	950	GORK	1 S	1037.7	1037.9	.5	11			
	2950	GORK	3 S	1037.8	1038	1	36	4		
	1420	ARCE	2 S/F	1037	1037.7	1.8				
	808	ONDR	2 S/F	1037	1037.6	.7	40			
	408	TRST	4 S/F	1119.8	1120	.6	100 D			
	408	TRST	7 C	1152.2	1152.7	2.1	51			
	2800	OTTA	20 GRF	1320		210 D	11			
	930	BORD	46 C	1325	1325.6	1	31	3		
	930	BORC	8 S	1332	1332	.3	34	1		
	9480	HUAN	20 GRF	1408.9	1451	42.1	8.4	3.8		0
	1420	ARCE	1 S	1510.2	1510.7	1.6				
	9100	ARCE	1 S	1510.4	1510.9	1.2				
	4995	SGMR	3 S	1549.8	1552.3	10.7	13.4	4		CONT
	2800	OTTA	27A RF	1645		255	4.4	4.1		
	2800	OTTA	24 R	1645	1652	7	4.4	2.2		
	2800	OTTA	24P R	1652		226	4.4			
	4995	BCUL	8 S	1715	1715.5	2	10	6		
	18	MCMA	41 F	1721	1724	5			1	
	8800	SGMR	1 S	1728.6	1728.9	3.4	9.2	3.7		CONT
	2800	OTTA	8 S	1750.6	1750.8	.8	2.8	1.4		
	2800	OTTA	23 GRF	1750	1900	145	18.6	6.2		
	18	MCMA	6 S	1759	1800	3			1	
	2800	OTTA	1 S	1821	1822	2	2.2	1.1		
	9400	HUAN	20 GRF	1822.8	1826.2	3.4	10.1	3.6		0
	4995	SGMR	20 GRF	1856.1	1904.2	38.9	35.2	14.1		CONT,SHF
	2800	OTTA	1 S	1856.5	1858	3	3	1.6		
	2695	SGMR	20 GRF	1900	1904.2	39	20	8		CONT,SHF
	8800	SGMR	20 GRF	1900.5	1904	33.5	26.7	10.7		CONT,SHF
	4995	BCUL	8 S	1902.5	1903.5	2	33	11		
	2800	OTTA	3 S	1903.7	1904	2	12.4	6		
	2800	OTTA	1 S	1915.5	1916	2	5.4	2.7		
	1420	BCUL	8 S	1915	1916.5	2.5	5	2		
	2800	OTTA	1 S	1919	1921.5	10	4.4	2.2		
	2695	PENT	26 FAL	2038	2100	22	-4.4	-2.2		
	2695	PENT	21 GRF	2120	2155	100	6	4.5		
	9400	HUAN	2 S/F	2143.4	2144.6	1.2	28.8	14.3		0
	9400	HUAN	21 GRF	2155.1	2215.7	60.6	28.8	14.9		0
	4995	BCUL	3 S	2209.5	2201.5	5.5	12	4		
	2695	PENT	45 C	2210.5	2211	5	9.4	3.5		
	1420	BCUL	45 C	2210	2212	8	49	16		
	4995	BCUL	4 SF	2321.5	2325	4.5	23	6		
	2695	MANI	3 S	2322.2	2325.4	5.3	32.5	21.6		
	8800	MANI	3 S	2322.4	2325.5	5.2	42.8	28.5		
	4995	MANI	3 S	2322.4	2325.5	5.2	29.9	19.9		
	2695	PENT	2 S/F	2324.2	2325.5	2	8.2	4.1		
	1420	BCUL	45 C	2324.5	2327	7.5	21	7		
	2695	PENT	1 S	2330.5	2331.6	2	5.4	2.5		
14	221	ABST	44 NS	0500	0728	230	13			
	200	GORK	44 NS	0536 E		440		45		
	100	GORK	44 NS	0537 E		443		150		
	200	HIRA	44 NS	0600 E	0620	145 D	140	65		HR
	202	IZMI	44 NS	0700		300	62			
	33	UPIC	44 NS	0700 E	1507.8	510 D				
	29	UPIC	44 NS	0700 E	1028.8	510 D				
	536	ONDR	44 NS	0803 E		393 D	21			
	260	ONDR	44 NS	0803 E		393 D	155	11		

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FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	127	TORN	44 NS	0840 E	1141.3	400 D	320			V=2
	245	SGMR	44 NS	1146 E	1757.4	623 D	254			CONT
	410	SGMR	44 NS	1146 E	1856	623 D	48.4			CONT
	606	SGMR	43 NS	1428.4	2000.9	460.6D	10.8			CONT
	200	HIRA	44 NS	2125 E	0630	660 D	190	70		MR
	100	HIRA	44 NS	2125 E	0520	660 D	450	190		MR
	208	VORO	44 NS	2300 E	0447	360 D	70	42		
	202	IZMI	41 F	0800	0807	29	450			
	9100	GORK	2 S/F	0804.2	0804.7	.9	24	10		
	6100	KISV	3 S	0806	0807	4	4			
	10500	BERN	45 C	0806.2	0807.2	1.5	20			OPR
	1470	BERL	4	0806.4	0807.5	1.5	6.6			
	29	UPIC	45 C	0806.5	0807.4	2.7				
	33	UPIC	45 C	0806.5	0807.2	2.5				
	9100	ARCE	3 S	0806.8	0807.4	1.6				
	1415	MANI	1 S	0807	0807.5	.8	8	5		
	15000	KISV	8 S	0807	0807.2	1	7			
	8800	MANI	3 S	0807.1	0807.5	.5	23.3	13.9		
	4995	MANI	1 S	0807.1	0807.3	.4	2.6	1.3		
	2695	MANI	1 S	0807.4	0807.5	.4	1	.6		
	9500	BERL	4	0807	0807.3	1	14			
	3000	BERL	2	0807	0807.3	1	3.8			
	1420	ARCE	2 S/F	0807	0807.4	1.6				
	1420	ARCE	1 S	0945.9	0946.1	.7				
	33	UPIC	4 S/F	1028.1	1028.5	1.4				
	29	UPIC	4 S/F	1028.1	1028.9	1.4				
	113	POTS	S	1028.3	1028.4	.3	2000	700		
	234	POTS	S	1028.5	1028.5	.1	450	150		
	237	TRST	41 F	1028.5	1028.5	.1	1720			B
	3100	CRIM	8 S	1100	1100.4	.7	8	3		
	3100	CRIM	3 S	1108.1	1109.3	2.5	20	8		
	3100	CRIM	29 PBI	1108.1	1110.6	74.	7			
	6100	KISV	21 GRF	1108	1109	4	6			
	10500	BERN	4 S/F	1108.3	1109.5	3	19			OPR
	3000	BERL	4	1108.5	1109.7	12	24			
	1470	BERL	2	1108.5	1109.6	17	2.6			
	1420	ARCE	1 S	1108.6	1109.4	4				
	9100	ARCE	3 S	1108.9	1109.7	2				
	9500	BERL	4	1108	1109.4	37	20			
	15000	KISV	3 S	1109	1109.4	2	6			
	2950	GORK	3 S	1109	1110	1.7	34	17		
	2950	GORK	29 PBI	1109	1110.7	37.3	16			
	9100	GORK	1 S	1109.2	1110	1.7	21.5	10		
	6100	KISV	21 GRF	1116	1117.5	4	3			
	9100	GORK	1 S	1117.4	1117.6	.8	8	3		
	245	SGMR	48 GB	1431.9	1434.2	6.2	742	223		S,CONT
	113	POTS	45 C	1434.2	1434.7	1.5	800	140		
	10500	BERN	4 S/F	1434.3	1434.8	2.5	21			OPR
	1420	ARCE	1 S	1434.5	1434.8	3				
	234	POTS	45 C	1434.5	1434.9	.9	375	15		
	237	TRST	41 F	1434.5	1434.8	.5	1270			B
	9400	HUAN	1 S	1434.7	1435.8	1.1	27.6	11.7		B
	9100	ARCE	3 S	1434.7	1435.2	4.4				
	2800	OTTA	1 S	1434.8	1435	1.5	1.6	.8		
	4995	BOUL	8 S	1434	1435	2.5	11	4		
	18	MCMA	42 SER	1456	1422	25			1	
	245	SGMR	6 S	1506.4	1507.9	3.4	109	32.7		S,CONT
	1420	ARCE	1 S	1507.3	1507.5	2.5				
	2800	OTTA	8 S	1507.5	1507.7	.5	1.4	.7		
	29	UPIC	4 S/F	1507.5	1507.8	1.3				
	33	UPIC	4 S/F	1507.6	1507.8	1.7				
	410	SGMR	6 S	1507.7	1507.9	.4	49.4	14.9		S,CONT
	9400	HUAN	22 GRF	1516.6	1655.5	138.9	14.6	5.2		B
	9100	ARCE	1 S	1529.7	1530.1	.8				
	1420	ARCE	2 S/F	1529	1529.4	2				
	18	MCMA	41 F	1537	1543	6			1	
	18	MCMA	41 F	1555	1558	3			1	
	18	MCMA	42 SER	1610	1620	13			1	
	4995	SGMR	3 S	1617.9	1621.7	4.8	10.2	3.1		CONT
	4995	BOUL	3 S	1620	1620.5	2	10	3		
	4995	BOUL	8 S	1655.5	1656.5	1.5	13	4		
	9400	HUAN	21 GRF	1709.4	1830.8	121.4	16.2	5.7		B
	2800	OTTA	23 GRF	1717.5	1736	135	7.8	4		
	2695	SGMR	3 S	1718.2	1721.5	6.3	27.2	8.2		CONT
	1415	SGMR	3 S	1719.6	1721.5	5.9	20.2	6.1		CONT
	1420	BOUL	45 C	1719	1721.5	5	7	2		
	606	SGMR	3 S	1720.4	1721.5	3.6	48.4	18.6		CONT
	8800	SGMR	3 S	1720.4	1721.3	1.6	20.2	6.1		CONT
	4995	SGMR	3 S	1720.6	1721.6	2.9	28.4	8.5		CONT
	4995	BOUL	8 S	1720	1721	3	20	7		
	9400	HUAN	1 S	1721	1722.4	1.4	16.2	8.8		B
	2800	OTTA	4 S/F	1721	1721.6	4	24.4	9		
	18	MCMA	42 SER	1752	1753	6			1	
	18	MCMA	6 S	1808	1811	5			2	
	4995	BOUL	3 S	1818.5	1820	3.5	12	4		

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	18	MCMA	6 S	1828	1829	2			1	
	2800	OTTA	20 GRF	1855	1857	25	3.6	1.2		
	9400	HUAN	1 S	1935.8	1937	1.2	16.2	4.1		O
	18	MCMA	42 SER	2005	2016	23			1	
	2800	OTTA	26 FAL	2045	2100	15	-2.8	-1.4		
	4995	BOUL	8 S	2053	2054	1	18	6		
	2695	PENT	20 GRF	2130.2	2143	30	2.8	2.4		
	18	MCMA	41 F	2144	2146	10			2	
	18	MCMA	41 F	2225	2232	12			2	
15	606	MANI	8 S	0352.9	0353.2	.7	105	67		I
	606	MANI	3 S	0359	0402.3	21	33.6	16.8		
	1415	MANI	47 GB	0359	0401.5	6	720	474		
	500	HIRA	46 C	0400.8	0402	5	30	15		O
	500	HIRA	46 C	0458.7	0459.2	1	75	30		SR
	5730	IRKU	45 C	0459	0459.6	3	12	7		WL
	5730	IRKU		0459	0501.1		21			WL
	221	ABST	44 NS	0500	0834	240	12			
	200	GORK	44 NS	0533 E		285		200		
	100	GORK	44 NS	0542 E		408		250		
	127	TORN	44 NS	0630 E	1324.3	520 D	670			V=2
	202	IZMI	44 NS	0700		300	100			
	29	UPIC	44 NS	0700 E	1112	510 D				
	33	UPIC	44 NS	0700 E	1110.9	510 D				
	536	ONDR	44 NS	0806 E		388 D	21			
	260	ONDR	44 NS	0806 E		388 D	101	9		
	245	SGMR	44 NS	1145 E	1938.3	626 D	3070			5,CONT
	410	SGMR	44 NS	1145 E	2109.6	626 D	51.6			5,CONT
	606	SGMR	43 NS	1759	2008.3	252 D	26.1			5,CONT
	100	HIRA	44 NS	2125 E	0440	660 D	800	400		MR
	200	HIRA	44 NS	2125 E	0300	660 D	700	240		MR
	208	VORO	44 NS	2300 E	0334	360 D	240	190		
	1415	MANI	1 S	0500.6	0501	.7	2.4	1.2		
	500	HIRA	46 C	0500.6	0500.9	1.3	125	30		MR
	4995	MANI	3 S	0500.7	0501	1	22.2	13.9		
	606	MANI	3 S	0500.7	0500.9	.8	15.1	8.4		
	8800	MANI	3 S	0500.7	0501	.6	35.7	20.4		IG
	5730	IRKU	23 GRF	0537	0544.2	25	17	5		WL
	650	GORK	21 GRF	0541 E	0545.8	20.1	8			
	2950	GORK	1 S	0544	0545	2.7	8.5	4		
	4995	MANI	3 S	0544.1	0544.3	.4	13.9	8.3		
	606	MANI	3 S	0544.1	0544.3	1.4	13.4	6.7		
	1415	MANI	3 S	0544.1	0544.3	1.4	18.5	9		
	2695	MANI	1 S	0544.1	0544.3	.4	4.1	2		
	8800	MANI	3 S	0544.1	0544.3	.4	10.2	5.1		IG
	650	GORK	4 S/F	0544.2	0544.7	1.2	24			
	950	GORK	46 C	0544.3	0544.9	4.5	74			
	950	GORK		0544.3	0547		20			
	2950	GORK	1 S	0546.8	0547.3	1.8	7	3		
	650	GORK	2 S/F	0546.8	0547.2	1.3	13			
	650	GORK	40 F	0616	0633.8	45.1	5			
	234	POTS	4	0652.1	0652.4	4.6	500	1		
	113	POTS	45 C	0656.3	0656.6	2	14000	3500		
	950	GORK	2 S/F	0657.9	0659.2	3.5	24			
	15000	KISV	8 S	0659	0659.3	2	7			
	15000	KISV	20 GRF	0705	0706.2	3	4			
	15000	KISV	29 PBI	0716	0716.1	2	50 D			
	6100	KISV	45 C	0712	0714	3	39			
	9100	GORK	4 S/F	0713.5	0714.4	1.2	60	32		
	9100	GORK	30 PBI	0713.5	0714.7	69.3	27.8	11.6		
	10500	BERN	4 S/F	0715.7	0716.6	3	50			OPR
	6100	KISV	45 C	0716	0717	3	16			
	3100	CRIM	1 S	0716	0716.2	1	4	1		
	5730	IRKU	48 C	0716	0716.7	58	20	19		WL
	5730	IRKU		0716	0721.9		31			WL
	5730	IRKU		0716	0729		31			WL
	5730	IRKU		0716	0734.3		70			WL
	5730	IRKU		0716	0748.5		120			WL
	9100	GORK	1 S	0718.6	0719.4	1.4	21.4	7.8		
	15000	KISV	3 S	0720	0724.4	3	10			
	3100	CRIM	7 C	0720	0721.2	16	18	6		
	3100	CRIM		0720	0729		17	6		
	3100	CRIM		0720	0734.5		60	20		
	10500	BERN	3 S	0720.3	0721.7	3	16			OPR
	6100	KISV	45 C	0721	0722	4	18			
	2950	GORK	21 GRF	0721	0727	49 U	15			
	2695	MANI	3 S	0721	0721.8	1.5	10.3	6.1		
	1415	MANI	1 S	0721	0721.9	1.5	8.4	4.8		
	4995	MANI	3 S	0721	0721.9	1.5	16.6	11.1		
	2950	GORK	3 S	0721.4	0722.5	2	35	17		
	8800	MANI	3 S	0721.5	0721.8	1	10.2	5.1		
	950	GORK	23 GRF	0721.5	0749.5	36	6.3			
	9100	GORK	1 S	0724.1	0726.1	4.7	16	6.8		
	15000	KISV	3 S	0726	0729	6	7			
	2950	GORK	3 S	0727	0729.6	5.1	23			

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	930	BORC	3 S	0730	0730.7	2	19	3		
	650	GORK	2 S/F	0731	0738.8	22.2	8.4			
	9100	GORK	3 S	0731.5	0731.9	2.2	35.5	15		
	15000	KISV	3 S	0733	0734.3	5	16			
	6100	KISV	20 GRF	0733	0735	7	16			
	1470	BERL	4	0733.5	0734.5	3	20			
	9500	BERL	4	0733.5	0734.4	3	19			
	3000	BERL	4	0733.5	0734.4	3	32			
	10500	BERN	3 S	0733.6	0734.2	3.5	23			OPR
	8800	MANI	3 S	0733.8	0734.3	1.9	30	20.4		
	4995	MANI	3 S	0733.8	0734.5	1.9	58.3	27.8		
	1415	MANI	3 S	0733.9	0734.7	1.9	25.2	12		
	606	MANI	1 S	0733.9	0734.7	1.9	4.2	2.5		
	2695	MANI	3 S	0733.9	0734.7	1.9	32.9	20.6		
	2950	GORK	3 S	0734	0735.1	3.7	106	50		
	950	GORK	3 S	0734.5	0735.3	2.1	19			
	3100	CRIM	47 GB	0744	0748	6	140	37		
	3100	CRIM	29 PBI	0744	0750	51	30			
	9100	GORK	3 S	0744.6	0745.9	7.9	191	39		
	10500	BERN	3 S	0744.7	0748.1	15	139			OPR
	15000	KISV	20 GRF	0746	0748	9	157			
	9100	ARCE	3 S	0746.9	0747.5	3.3				INTERRUPTION
	9100	ARCE	30 PBI	0750.2		46				
	1415	MANI	3 S	0747.2	0748.2	3.3	72	48		
	4995	MANI	3 S	0747.3	0748.8	7.7	113.9	75		
	8800	MANI	8 S	0747.3	0748.2	5.5	153.3	102.2		I
	2695	MANI	3 S	0747.3	0748.7	5.7	84.4	55.6		
	2950	GORK	3 S	0748	0749.3	6	270			
	6100	KISV	20 GRF	0748	0749	12	46			
	9100	ARCE	3 S	0802.2	0802.4	1.2				
	15000	KISV	23 GRF	0812	0814	13	4			
	930	BORD	46 C	0850.7	0851.6	1.3	50	2		
	650	GORK	2 S/F	0854.8	0855.8	2	8	3		
	15000	KISV	3 S	0900	0905.3	8	14			
	650	GORK	1 S	0915	0926.5	18.9	7	3.5		
	1420	ARCE	1 S	0931.1	0931.3	.5				
	1420	ARCE	2 S/F	0938.4	0938.5	.5				
	930	BORD	46 C	0941.3	0941.5	.2	23	2		
	100	GORK	41 F	1057.8	1058.7	17.5	4200			
	100	GORK		1057.8	1103.2		4200			
	100	GORK		1057.8	1120 U		4200			
	29	UPIC	46 C	1107.5	1112	6.5				
	6100	KISV	45 C	1108	1110	11	13			
	33	UPIC	46 C	1108.1	1110.9	6.7				
	127	TORN	49 GB	1109	1112 U	3.8	600 D	460		SATURATED
	127	TORN		1109	1110.2		1600			
	127	TORN		1109	1111.3		1300			
	202	IZMI	45 C	1109.8	1111.5	3	3000	1170		
	408	TRST	47 GB	1109.9	1111	2.6	92 D			
	1420	ARCE	4 S/F	1110.4	1111.2	4				
	9500	BERL	4	1110.5	1111.5	8.5	73			
	1470	BERL	4	1110.5	1111.5	65	20			
	3000	BERL	4	1110.5	1111.8		17			
	536	ONDR	4 S/F	1110.5	1111.3	2	228	49		
	650	GORK	4 S/F	1110.6	1111.7	2	105	24		
	10500	BERN	3 S	1110.7	1111.9	3.5	77			OPR
	950	GORK	3 S	1110.7	1111.8	1.9	200	100		
	9100	ARCE	3 S	1110.8	1112	4				
	9100	GORK	4 S/F	1110.9	1112.1	3.1	95.6	15		
	237	TRST	42 SER	1110.9	1111.8	1.7	7600			30R
	2650	OWIN	1 S	1110	1111	2	10	3		
	930	BORC	46 C	1110	1111.5	3	465	5		
	260	ONDR	4 S/F	1110		2.5	216	66		
	808	ONDR	4 S/F	1110	1111.3	2	485	40		
	2950	GORK	3 S	1111	1112.1	2	24	12		
	234	POTS	4	1111.1	1111.8	1.1	260	5		
	113	POTS	45 C	1111.6	1111.90	1	9000			
	408	TRST	7 C	1114.4	1114.6	.8	46			
	9100	ARCE	1 S	1130.1	1130.3	1				
	808	ONDR	1 S	1152	1152	.2	22			
	808	ONDR	1 S	1227.8	1227.8	.2	20			
	113	POTS	45 C	1232.1	1232.3	.6	200	40		
	113	POTS	45 C	1257.4	1257.9	1.2	700	70		
	808	ONDR	42 SER	1308.5		48	28			
	113	POTS	4	1323.7	1324.3	3.1	1750	180		
	2800	OTTA	21 GRF	1330	1400	80	6.4	3.2		
	930	BORD	8 S	1338.8	1339.1	.4	32	2		
	10500	BERN	4 S/F	1345.7	1348.5	7	44			OPR
	9400	HUAN	4 S/F	1345.8	1359.4	13.6	45.1	17.5		L
	3000	BERL	4	1345	1348	20	35			
	9500	BERL	4	1345	1348.5	20	40			
	15400	SGMR	3 S	1346	1348.2	3.2	61.2	24.5		5,CONT,SHF
	2800	OTTA	3 S	1347.1	1348.3	7	20	5		
	2695	SGMR	3 S	1347.3	1348.3	5.7	23.8	9.5		5,CONT,SHF
	4995	SGMR	3 S	1347.3	1347.5	2.7	62	29.8		5,CONT,SHF

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	606	SGMR	1 S	1347.3	1353.1	6.3	2.6	.3		S,CONT,SWF
	1415	SGMR	1 S	1347.3	1347.6	6.7	1.6	.4		S,CONT,SWF
	8800	SGMR	3 S	1347.4	1347.5	1.7	44.5	33.2		S,CONT,SWF
	2650	DWIN	2 S	1347	1348	13	17	5		
	113	POTS	45 C	1355.5	1355.6	1.2	550	90		
	127	TORN	48 C	1357 U	1400.3	18 U	330			
	127	TORN		1357 U	1405.7		410			
	113	POTS	4	1418.2	1420.1	8.4	5000	200		
	930	BORD	41 F	1424.7	1424.8	.3	19	2		
	245	SGMR	7 S	1554.3	1556.8	6.2	460	138		S,CONT
	410	SGMR	6 S	1554.8	1555.6	3	10.8	2.2		S,CONT
	606	SGMR	3 S	1555	1555.5	4.1	59.4	17.2		S,CONT
	410	SGMR	6 S	1657.2	1657.3	.4	65.7	19.7		CONT
	2695	BOUL	1 S	1840.5	1841	2.5	3	1		
	2695	SGMR	1 S	2011.2	2013.2	4.2	3.6	1.4		CONT
	8800	SGMR	3 S	2011.3	2012.3	4.9	13.9	5.6		CONT
	1420	BCUL	8 S	2011.5	2012.5	4.5	8	3		
	15400	SGMR	1 S	2012.3	2012.8	1.4	6.1	2.4		CONT
	4995	SGMR	3 S	2012.6	2013	1.5	12.6	5		CONT
	9400	HUAN	1 S	2012.7	2013.9	1.2	15	7.6		L
	1415	SGMR	1 S	2012.8	2013.2	1.2	4.7	1.9		CONT
	2695	PENT	1 S	2012	2013	2	4.4	1.5		
	2695	BCUL	8 S	2013.5	2014	1.5	5	2		
	1420	BCUL	8 S	2138.5	2139.5	1.5	7	2		
	4995	BOUL	1 S	2152	2153.5	3	13	4		
	1420	BOUL	45 C	2227.5	2230	5	4	1		
	9400	HUAN	3 S	2228.1	2231	2.9	71.8	31.6		L
	500	HIRA	46 C	2229	2229.4	1.7	140	90		SR
	2695	BOUL	8 S	2229.5	2230	1.5	9	3		
	2695	PENT	8 S	2229	2229.2	.8	11.5			
	500	HIRA	42 SER	2231.6	2231.9	6	900	60		SR
	1420	BOUL	45 C	2234.5	2237	2.5	4	1		
	2695	BCUL	3 S	2236.5	2239	3.5	3	1		
	1420	BCUL	8 S	2252	2253	2	2	1		
	4995	BOUL	3 S	2327.5	2331	9	23	8		
16	4995	MANI	3 S	0016.6	0016.8	.4	17.4	11.6		
	606	MANI	1 S	0016.6	0016.8	.4	4	2.4		
	1415	MANI	1 S	0016.6	0016.8	.4	2	1		
	2695	MANI	3 S	0016.6	0016.8	.4	10.2	5.1		
	8800	MANI	1 S	0016.6	0016.8	.4	9.8	4.9		I
	208	VORO	47 GB	0221	0225 U	8	200 D			
	100	GORK	44 NS	0530 E		450		100		
	33	UPIC	44 NS	0630 E	1315.5	570 D				
	29	UPIC	44 NS	0630 E	1305.8	570 D				
	127	TORN	44 NS	0630 E	1306	520 D	2000 U			V=2
	202	IZMI	44 NS	0700		300	120			
	260	ONDR	44 NS	0700 E		423 D	158	14		
	536	ONDR	44 NS	0700 E		423 D	88	7		
	410	SGMR	44 NS	1143 E	2028.2	629 D	163			3,5,CONT
	245	SGMR	44 NS	1143 E	2012.7	629 D	141			3,5,CONT
	15000	KISV	45 C	0605	0610	19	21			
	606	MANI	47 S	0607	0610	9	1500	850		
	500	HIRA	48 C	0607.5	0609.3	9	1500	450		SR
	9100	GORK	3 S/F	0607.6	0609.6	2	61			
	2950	GORK	46 C	0607.6	0610	9	28			
	2950	GORK		0607.6	0613		25			
	5730	IRKU	46 C	0607.7	0609	11	32	12		WL
	5730	IRKU		0607.7	0609.4		47			WL
	5730	IRKU		0607.7	0609.9		50			WL
	5730	IRKU		0607.7	0611		26			WL
	5730	IRKU		0607.7	0611.7		50			WL
	8800	MANI	3 S	0607.8	0610	7.2	71.5	45.9		IG
	2695	MANI	3 S	0607.8	0611.8	7.2	13.4	8		
	1415	MANI	1 S	0607.8	0611.6	7.2	1.5	.9		
	4995	MANI	3 S	0607.8	0610	7.2	35.3	21.7		
	650	GORK	46 C	0608	0610.1U	9.7	640			
	6100	KISV	46 C	0608	0611	23	21			
	950	GORK	41 F	0608.1	0613.7	25	13.4			
	950	GORK		0608.1	0621.8		22			
	950	GORK		0608.1	0630.5		27			
	100	GORK	41 F	0608.6	0609.3	8.3	73000			
	100	GORK		0608.6	0613		73000			
	100	GORK		0608.6	0615.7		73000			
	9100	GORK	21 GRF	0609.9	0610.6	11.8	18	9		
	9100	GORK	3 S/F	0612.8	0613.1	.7	55	26		
	2950	GORK	1 S	0621.4	0621.7	.9	6.8	3.4		
	650	GORK	23 GRF	0627	0651.7	105.6	33	15		
	2950	GORK	1 S	0632.2	0632.5	.5	10	5		
	500	HIRA	27 RF	0640	0656	66	45	20		SR
	950	GORK	1 S/F	0732.8	0735.9	4.3	24			
	650	GORK	4 S/F	0733.3	0733.6	3.2	40			
	202	IZMI	45 C	0752	0754.5	4	1560	650		
	100	GORK	22 GRF	0837	0837.3	.7	68500			
	650	GORK	1 S	0925.8	0930.2	6	10	3		

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FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	6100	KISV	2B PRE	0940	0943	8	7			
	234	POTS	45 C	0954.5	0955.5	2.2	175	20		
	113	POTS	45 C	0958.5	0959.6	2.5	1900	250		
	1470	BERL	4	0958.5	0959.3	1.5	13			
	100	GORK	46 C	0959	1000	1.6	66000			
	1420	ARCE	1 S	1107.4	1107.9	1.1				
	1470	BERL	4	1107.5	1107.9	.8	5.2			
	3100	CRIM	1 S	1200	1201	4	4	1		
	2950	GORK	1 S	1200.8	1201.3	1.3	6.8	4.4		
	9100	GORK	2 S/F	1200.9	1201.8	1.6	7.6	3.5		
	1470	BERL	2	1210.5	1210.9	1	4.1			
	1470	BERL	2	1212.5	1212.7	1	4.7			
	113	POTS	6	1300.2	1305.6	11	7000	300		
	606	SGMR	3 S	1301	1303	3	332.8	99.8		5,CONT
	234	POTS	6	1301.4	1302	5.3	500	10		
	1470	BERL	2	1301	1302.6	3	4.7			
	1415	SGMR	1 S	1302	1302.6	1	5	2		5,CONT
	237	TRST	41 F	1305.4	1305.9	1.3	2550			0
	245	SGMR	48 GB	1305.6	1306	2.4	2283	913		5,CONT
	410	SGMR	6 S	1305.7	1306	2.3	148.8	56.3		5,CONT
	1470	BERL	2	1306	1306.4	1.5	2.6			
	2800	OTTA	27AFRF	1320		150	3	2.4		
	2800	OTTA	24 R	1320	1400	40	3	1.5		
	9400	HUAN	20 GRF	1351.2	1419.4	68.2	13.4	4.6		0
	2800	OTTA	24P R	1400		85	3			
	9400	HUAN	20 GRF	1426	1450.7	24.7	15.1	5.3		0
	1420	BCUL	45 C	1519.5	1522.5	5	37	13		
	1415	SGMR	3 S	1521.8	1523	2.2	45.9	18.4		5,CONT
	2695	SGMR	1 S	1522.3	1523	1.4	8.8	3.5		5,CONT
	606	SGMR	3 S	1522.5	1523	3.5	128	51.2		5,CONT
	2800	OTTA	4 S/F	1522	1523	2	14.4	3.8		
	2650	DWIN	45 C	1522		1	110	30		
	2455	SGMR	48 GB	1523.1	1527	5.4	832	333		5,CONT
	18	MCMA	6 S	1523	1526	4			2	
	2695	BCUL	8 S	1523	1524	2	43	14		
	410	SGMR	6 S	1524.6	1525.2	3.4	92.4	37		5,CONT
	2800	OTTA	26 FAL	1525	1550	25	-3	-2		
	1420	ARCE	4 S	1621.1	1622.7	4.5				
	2800	OTTA	21 GRF	1820	1940	150	6	3		
	606	SGMR	46 C	1926.8	1927.1	11.5	38.8	11.6		CONT
	606	SGMR	45 C	1926.8	1937.2		106.1			CONT
	410	SGMR	7 C	1926.9	1927.9	12.5	49	14.7		CONT
	410	SGMR	7 C	1926.9	1929.8		47.7			CONT
	2800	OTTA	1 S	2026.5	2027.2	3	3	1.5		
	9400	HUAN	4 S/F	2113.3	2118.1	4.8	18.5	5.3		0
	200	HIRA	44 NS	2125 E	2230	660 D	55	35		MR
	100	HIRA	44 NS	2125 E	2320	660 D	130	45		MR
	208	VORO	44 NS	2300 E	0045	360 D	66	37		
	1415	SGMR	20 GRF	2126.1	2132.5	45.9D	3.9	1.3		CONT
	606	SGMR	45 C	2128.5	2132.8	43.5D	75.5	31.8		CONT
	606	SGMR	46 C	2128.5	2139.8		28.6			CONT
	2800	OTTA	4 S/F	2128	2132.5	9	29	9		
	4995	SGMR	20 GRF	2129.2	2132.3	42.8D	29.2	8.7		CONT
	8800	SGMR	20 GRF	2129.8	2132.3	42.2D	36.6	11		CONT
	2695	SGMR	20 GRF	2130	2132.4	42 D	26.1	7.8		CONT
	9400	HUAN	20 GRF	2130	2137.6	7.6	25.2.	8.4		L
	245	SGMR	7 C	2132.1	2135.6	39.9D	326	47.8		CONT
	410	SGMR	49 GB	2135.2	2136.3	36.8D	2003	601		CONT
	2695	PENT	3 S	2225.2	2226.7	5	14	5		
17	208	VORO	48 C	0308	0312	9	350 D			
	208	VORO		0308	0315		350 D			
	606	MANI	3 S	0310.1	0314	5.5	58.7	37.6		
	500	HIRA	46 C	0310.6	0313.1	5	230	80		MR
	5730	IRKU	2 S/F	0311	0312.4	5	9	3		ML
	8800	MANI	3 S	0312	0312.6	1	10.8	5.4		IG
	2695	MANI	1 S	0312	0312.5	1	5.4	2.7		
	1415	MANI	3 S	0312	0314.7	3	18.3	12.2		
	4995	MANI	3 S	0312	0312.6	1	13.9	8.3		
	100	GORK	44 NS	0537 E		411		10		
	33	UPIC	44 NS	0630 E	1337.9	570 D				
	29	UPIC	44 NS	0630 E	1340.2	570 D				
	127	TORN	44 NS	0640 E	1326.7	510 D	140			V=1
	202	IZMI	44 NS	0700		300	82			
	200	GCRK	44 NS	0736 E		300		15		
	260	ONDR	44 NS	0810 E		387 D	172	15		
	410	SGMR	44 NS	1142 E	1744	631 D	43.7			3,5,CONT
	245	SGMR	44 NS	1142 E	1213	631 D	154.3			3,5,CONT
	200	HIRA	44 NS	2125 E	0310	660 D	35	15		ML
	208	VORO	44 NS	2300 E	2346	360 D	26	19		
	4995	MANI	1 S	0603.3	0603.5	.3	5.4	2.7		
	1415	MANI	1 S	0603.4	0603.5	.2	3	2		
	606	MANI	3 S	0603.4	0603.6	.4	37.6	23.5		
	8800	MANI	1 S	0603.4	0603.6	.3	5.4	2.7		
	2695	MANI	1 S	0603.4	0603.5	.2	5.4	2.7		

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	100	GORK	41 F	0646	0646.8U	13	90			
	100	GORK		0646	0648.4		2900			
	100	GORK		0646	0653 U		90			
	100	GORK		0646	0658.5		2900			
	234	POTS	45 C	0652.7	0653	.6	700	45		
	113	POTS	45 C	0652.7	0653.1	.8	4000	800		
	234	POTS	45 C	0831	0831.3	.6	120	40		
	202	IZMI	5 S	0933.8	0934	.7	460	110		
	113	POTS	6	0942.2	0944.7	4.5	500	15		
	100	GORK	45 C	1035.1	1035.6	1.5	100			
	100	GORK		1035.1	1036.2		100			
	234	POTS	45 C	1035.4	1035.4	1.3	100	1		
	113	POTS	45 C	1035.5	1035.6	.9	280	20		
	202	IZMI	45 C	1035.5	1036.2	2	630	330		
	234	POTS	45 C	1103	1103.3	.6	330	20		
	237	TRST	41 F	1103.1	1103.4	.5	850			0
	202	IZMI	41 F	1108	1109.5	19	285			
	202	IZMI	41 F	1148.2	1155.7	8	200			
	100	GORK	41 F	1148.7	1149	5.2	100			
	100	GORK		1148.7	1150.9		100			
	100	GORK		1148.7	1151.9		100			
	100	GORK		1148.7	1153.6U		100			
	113	POTS	6	1148.8	1153.4	5.1	350	10		
	938	BORD	41 F	1150.5	1151.9	2.5	24	2		
	9100	ARCE	1 S	1151.5	1152.2	1.5				
	1420	ARCE	1 S	1151.8	1152	.6				
	1470	BERL	2	1151.8	1152	1	3.6			
	536	ONDR	4 S/F	1151	1151.7	1.5	32			
	1420	ARCE	1 S	1304.3	1304.4	.8				
	1470	BERL	2	1304.3	1304.5	.7	1.6			
	113	POTS	45 C	1304.4	1304.7	.7	280	45		
	9100	ARCE	1 S	1304.5	1304.6	.8				
	9100	ARCE	2 S/F	1318	1318.4	1				
	9400	HUAN	20 GRF	1331.6	1421.5	89.9	11.6	3.6		0
	113	POTS	45 C	1338.6	1341.5	3.7	7700	200		
	234	POTS	45 C	1340.4	1341.5	2.6	2900	25		
	237	TRST	42 SER	1340.5	1341.5	1.7	5900			0
	245	SGMR	48 GB	1340.5	1341.5	2.5	895	269		3G,CONT
	418	SGMR	7 C	1340.8	1341.5	2	481	144		3G,CONT
	4995	SGMR	1 S	1340.8	1341.6	1.9	4.9	1.5		3G,CONT
	536	ONDR	45 C	1340.8	1340.8	1.5	176	30		
	2695	SGMR	1 S	1340.8	1341.6	1.2	4.4	1.3		3G,CONT
	1420	ARCE	4 S/F	1340.9	1341.3	1.6				
	2650	OWIN	45 C	1340		1	15	5		
	606	SGMR	47 GB	1341.2	1341.5	1.3	715	215		3G,CONT
	1415	SGMR	3 S	1341.2	1341.5	1.2	258	77.4		3G,CONT
	3000	BERL	2	1341	1341.5	2	4.5			
	1470	BERL	4	1341	1341.2	2	84			
	2800	OTTA	1 S	1341	1341.5	1	7.2	3		
	127	TORN	49 GB	1348.5	1351.6	4.5	890 D			UNCERTN
	245	SGMR	7 C	1424.5	1426.2	3.5	343	103		CONT
	808	ONDR	4 S/F	1440.6	1440.6	3	272	27		
	9400	HUAN	20 GRF	1454.1	1531.9	77.8	15	5.5		L
	9100	ARCE	22 GRF	1500.6	1505.2	20				
	2800	OTTA	21 GRF	1500	1503	38	8.6	3		
	2650	OWIN	45 C	1500	1505	18	20	10		
	4995	SGMR	3 S	1502	1505.2	6.5	19.4	5.8		CONT
	8800	SGMR	3 S	1502.5	1505	5.5	10.4	3.1		CONT
	2695	SGMR	3 S	1502.5	1505.2	5.5	20.8	6.2		CONT
	1420	ARCE	1 S	1502.7	1505.2	4				
	2800	OTTA	45 C	1503.5	1505	2.2	10.6	5.3		
	245	SGMR	6 S	1539.5	1539.9	1.2	126	37.8		CONT
	18	MCMA	6 S	1745	1747	3			2	
	18	MCMA	6 S	1810	1814	6			2	
	245	SGMR	6 S	1811	1812	2	153.2	61.3		CONT
	18	MCMA	41 F	2047	2051	6			1	
18	1415	MANI	3 S	0044.5	0046.5	3.7	13.2	7.9		
	4995	MANI	1 S	0046	0046.5	1	5.8	2.9		
	8800	MANI	1 S	0046	0046.5	.6	5.1	2.5		
	2695	MANI	1 S	0046	0046.5	1.3	6	4.5		
	2930	VORO	3 S	0205	0209	9	19			
	5730	IRKU	2 S/F	0207.2	0207.9	8	28	6		WL
	2695	MANI	3 S	0207.3	0207.7	2.7	24.3	16.2		
	1415	MANI	3 S	0207.3	0207.9	2.4	27.7	18.5		
	100	HIRA	7 C	0207.5	0208	1.5	700	300		0
	8800	MANI	3 S	0207.6	0207.9	.9	25.5	17		I
	4995	MANI	3 S	0207.6	0208	2	34.9	23.3		
	200	GORK	44 NS	0531 E		387		8		
	100	GORK	44 NS	0531 E		389		5		
	127	TORN	44 NS	0640 E	1002.5	510 D	45			V=1
	282	IZMI	44 NS	0700		300	34			
	260	ONDR	44 NS	0800 E		365 D	135	3		
	33	UPIC	43 NS	0801.5	1208.8	478.5D				
	29	UPIC	43 NS	0801.6	1002.8	316.1U				

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	245	SGMR	44	NS	1141	E	1845.9	634	D	296			3G,CONT
	410	SGMR	44	NS	1141	E	1843.8	634	D	109			3G,CONT
	200	HIRA	44	NS	2125	E	2330	660	D	10	5		WR
	208	VORO	44	NS	2300	E		360	D		13		
	500	HIRA	27	RF	0600		0702	98		20	10		WR
	930	BORD	41	F	0936.3		0936.3	.3		18	2		
	113	POTS	6		1002.4		1031.8	30		200	1		
	237	TRST	41	F	1007		1007.1	.3		145			8R
	237	TRST	41	F	1021.2		1021.3	.4		360			3L
	536	ONDR	4	S/F	1035.5		1035.5	1		50			
	930	BORD	42	SER	1035		1040	6		165	2		
	237	TRST	41	F	1132.9		1132.9	.1		155			2L
	237	TRST	41	F	1148.3		1148.4	.2		388			6L
	113	POTS		S	1238.7		1238.8	.1		700	250		
	808	ONDR	45	C	1357.5		1358	5		131	20		
	930	BORD	42	SER	1357.6		1403.4	6.4		211	3		
	2800	OTTA	40	F	1358		1403	6		7.6			
	536	ONDR	45	C	1400.5		1401.3	1.2		29			
	237	TRST	41	F	1540.5		1540.6	.2		305			6L
	2800	OTTA	20	GRF	1604		1614	20		1.4	.7		
	2800	OTTA	20	GRF	1635		1647	15		1.4	.7		
	410	SGMR	6	S	1731		1731.1	3.3		237	94.8		CONT
	606	SGMR	3	S	1731		1733.1	3		79.8	31.9		CONT
	2695	SGMR	3	S	1731.2		1732.4	6.8		34.1	13.4		CONT
	1415	SGMR	3	S	1731.3		1732.5	5.4		29.8	11.9		CONT
	2800	OTTA	4	S/F	1731		1732.5	8		32.6	6.6		
	4995	SGMR	1	S	1732.3		1732.5	1.7		7.3	2.9		CONT
	245	SGMR	48	GB	1908.6		1909.2	2.3		2130	639		CONT
	410	SGMR	6	S	1909		1909.2	.8		22.7	6.8		CONT
	2800	OTTA	1	S	1909		1909.3	1		1.8	.9		
	18	MCMA	41	F	2101		2103	5				1	
	18	MCMA	42	SER	2114		2120	24				2	
	2800	OTTA	1	S	2150		2150.1	1.5		2.6	1.2		
19	200	GORK	44	NS	0521	E		390			15		
	127	TORN	44	NS	0640	E	1411.2	510	D	90			V=1
	260	ONDR	44	NS	0750	E		394	D	59	2		
	245	SGMR	44	NS	1139	E	1536.5	637	D	32.5			3,5
	410	SGMR	44	NS	1139	E	1428	637	D	16.4			3,5
	200	HIRA	44	NS	2125	E	0030	660	D	20	10		MR
	208	VORO	44	NS	2300	E		360	D		17		
	3100	CRIM	1	S	1045		1047	5		3	1		
	9100	GORK	1	S	1046.2		1047	5.8		10.6	2.2		
	113	POTS	45	C	1351.6		1352	.9		385	15		
	18	MCMA	6	S	1733		1734	2				1	
	18	MCMA	6	S	1932		1934	3				1	
	18	MCMA	6	S	1953		1954	3				1	
20	208	VORO	48	C	0350		0354.5	32		580			
	208	VORO			0350		0401.4			615			
	208	VORO			0350		0413.5			620			
	2930	VORO	47	GB	0350		0410	30		324			
	202	IZMI	44	NS	0700			300		28			
	260	ONDR	44	NS	0800	E		410	D	28			
	127	TORN	43	NS	0800	U	0939.8	430	D	17			V=8
	33	UPIC	43	NS	0947.5		1242.6	176.7	U				
	29	UPIC	43	NS	0950.3		1243.1	174.7	U				
	245	SGMR	44	NS	1138	E	1559.2	639	D	99.3			5,CONT
	410	SGMR	44	NS	1138	E	1711.4	639	D	8			5,CONT
	237	TRST	41	F	0740.7		0740.8	.2		120			4R
	408	TRST	7	C	1022.7		1022.9	.7		150			
	113	POTS	45	C	1242.7		1242.8	.3		100	15		
	536	ONDR	3	S	1356.6		1356.6	.3		29			
	2800	OTTA	20	GRF	1435		1445	15		1.6	.8		
	2800	OTTA	20	GRF	1525		1529	20		1.8	.9		
	2800	OTTA	1	S	1607		1608	4		3.4	1.5		
	208	VORO	44	NS	2300	E		360	D		9		
21	100	GORK	44	NS	0513	E		8.9			5		
	200	GORK	44	NS	0515	E		440			5		
	260	ONDR	44	NS	0800	E		411	D	18			
	245	SGMR	44	NS	1136	E	1452.5	642	D	57.2			3
	930	BORD	41	F	0759.4		0759.4	.4		29	2		
	113	POTS	45	C	0850.8		0850.8	.1		100	20		
	930	BORD	8	S	0937.4		0937.5	.2		26	2		
	2695	PENT	20	GRF	2235		2255	60	D	5			
	208	VORO	44	NS	2300	E	0207	360	D	20	8		
22	500	HIRA	46	C	0206		0206.9	3.3		40	10		0
	200	HIRA	46	C	0206		0207	4		100	50		0
	200	GORK	44	NS	0530	E		480			5		
	260	ONDR	44	NS	0804	E		366	D	20			
	100	GORK	43	NS	0828			257			5		
	127	TORN	43	NS	0956	U	1053.2	315		22			V=1
	245	SGMR	44	NS	1135	E	2119.8	645	D	30.4			3

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	200	HIRA	44	NS	2120 E	0630	670 D	30	15		MR
	208	VORO	44	NS	2300 E		360 D		16		
	33	UPIC	8	S	0831.1	0831.1	.3				
	29	UPIC	3	S	0831.2	0831.3	.2				
	3100	GRIM	1	S	0840	0844	6	3	1		
	3100	GRIM	2	S/F	1002	1003	10	3	1		
	9100	GORK	1	S	1049	1049.2	.4	13.7	6.8		
	6100	KISV	1	S	1120	1123	5	2			
	3000	BERL	2		1123.5	1124.9	5.5	5.3			
	1470	BERL	2		1124	1125	2	1.8			
	536	ONDR	4	S/F	1206	1206.7	1.5	124	13		
	1470	BERL	2		1207.5	1208.2	1	3.1			
	113	POTS	45	C	1236	1236.1	.2	200	30		
	2800	OTTA	27A	RF	1322		168	2	1.8		
	2800	OTTA	24	R	1322	1340	18	2	1		
	33	UPIC	8	S	1339.6	1339.7	.4				
	29	UPIC	8	S	1339.8	1340	.3				
	2800	OTTA	24P	R	1340		127	2			
	2800	OTTA	22	GRF	1523	1527	22	1.8	.9		
	2800	OTTA	26	FAL	1547	1610	23	-2	-1		
23	2930	VORO	3	S	0220	0225	15	29			
	221	ABST	44	NS	0500	0632	240	11			
	100	GORK	44	NS	0500 E		450		10		
	200	GORK	44	NS	0500 E		438		23		
	127	TORN	44	NS	0630 E	1225	520 D	120			V=1
	260	ONDR	44	NS	0800 E		420 D	19			
	245	SGHR	44	NS	1133 E	1933.3	648 D	19.8			
	100	HIRA	44	NS	2120 E	2310	310 D	40	15		MR
	200	HIRA	44	NS	2120 E	2320	670 D	30	10		MR
	208	VORO	44	NS	2300 E		360 D		16		
	9100	ARCE	2	S/F	0937.5	0938.5	1.8				
	9100	ARCE	2	S/F	0940.7	0941.2	2				
	127	TORN	8	S	1206.1	1206.5	1	220	75		
	2800	OTTA	24	R	1315	1328	13	2.6	1.3		
	2800	OTTA	27A	RF	1315		190	2.6	2.2		
	2800	OTTA	1	S	1317	1318	3	2.6	1.3		
	9100	ARCE	4	S/F	1318.3	1319.1	4				
	2800	OTTA	24P	R	1328		132	2.6			
	18	HCMA	6	S	1420	1422	2			1	
	2800	OTTA	26	FAL	1540	1625	45	-2.6	-1.3		
	2695	PENT	1	S	2317.9	2318.2	1	2.8	1.4		
24	500	HIRA	46	C	0029.7	0030	1	140	50		WR
	500	HIRA	46	C	0240.8	0241.7	1	60	10		WR
	606	MANI	8	S	0241.1	0241.8	1.4	231	154		
	1415	MANI	3	S	0241.4	0242.1	1.1	10.9	6.5		
	2695	MANI	3	S	0241.4	0242.1	2.6	16.3	9.7		
	8800	MANI	1	S	0241.6	0242.1	.9	8	4		
	4995	MANI	3	S	0241.6	0242.1	.9	20.7	13.8		
	5730	IRKU	2	S	0241	0241.7	1.5	16	7		WR
	221	ABST	44	NS	0500	0615.2	240	16			
	100	GORK	44	NS	0500 E		408		5		
	200	GORK	44	NS	0500 E		388		5		
	127	TORN	44	NS	0710 E	1211.8	480 D	130			V=1
	260	ONDR	44	NS	0750 E		440 D	13	2		
	245	SGHR	44	NS	1131 E	2027.1	651 D	6.1			
	606	MANI	3	S	0605.6	0606.2	.9	101.7	55		
	1415	MANI	1	S	0606	0606.2	.4	5.4	3.2		
	1420	ARCE	4	S/F	0734.9	0736.5	2.8				
	3100	GRIM	3	S	0735	0736.5	2	13	4		
	6100	KISV	45	C	0735	0737	9	4			
	234	POTS	4		0735.1	0736.6	2	600	20		
	237	TRST	41	F	0735.3	0735.5	.6	630			9L
	606	MANI	3	S	0735.4	0735.8	1.8	16.5	11		
	1415	MANI	3	S	0735.5	0736.9	2.4	30.5	19.6		
	113	POTS	4		0735.5	0736.7	1.8	1300	130		
	650	GORK	4	S/F	0735.5	0736.9	2.7	14	4		
	2695	MANI	3	S	0735.6	0737	2.5	18	11.4		
	2950	GORK	3	S	0735.7	0737.1	2	24	5		
	950	GORK	4	S/F	0735.7	0737	3	18	9		
	100	GORK	41	F	0735.8	0737.1U	5.9	100			
	100	GORK			0735.8	0740.9		100			
	3000	BERL	4		0735	0736.6	5	15			
	930	BORC	46	C	0735	0736.8	3	42	5		
	1470	BERL	4		0735	0736.8	6.5	27			
	202	IZMI	5	S	0736	0736.2	1	1440	375		
	9100	GORK	1	S	0736.1	0736.9	1.1	9.5	4		
	237	TRST	41	F	0736.3	0736.7	.7	895			0
	200	GORK	5	S	0736.5	0736.8	.8	48			
	5730	IRKU	45	C	0736	0736.5	2	11	3		WR
	5730	IRKU			0736	0736.8		8			WL
	221	ABST	41	F	0751.2	0752.2	1	11			
	536	ONDR	3	S	0807.6	0807.6	.3	25			
	237	TRST	41	F	0855.5	0855.5	.1	89			0

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	536	ONDR	2 S/F	0930.8	0930.8	1	20			
	1470	BERL	2	0932	0932.8	1.5	2.1			
	3000	BERL	2	0932.3	0932.6	.7	4.2			
	930	BCRC	46 C	1039.6	1039.8	.3	30	2		
	536	ONDR	45 C	1124.6	1125.5	4	50	3		
	1470	BERL	4	1126	1126.3	2.5	1.4			
	9100	ARCE	2 S/F	1221.6	1222	1.5				
	18	MCMA	41 F	1840	1841	3			1	
	18	MCMA	41 F	1940	1942	4			N	
	245	SGMR	6 S	2002.4	2003.8	2	110.2	44.1		
	1420	BOUL	8 S	2002.5	2004	3.5	10	3		
	606	SGMR	3 S	2002.8	2003.4	2.4	59.3	23.7		
	410	SGMR	6 S	2003	2003.3	1.5	21.2	8.5		
	2800	OTTA	1 S	2003.2	2003.8	1	5.8	2.8		
	2695	SGMR	1 S	2003.3	2003.6	1	7.4	2.9		
	1415	SGMR	3 S	2003.3	2003.7	.8	10.2	4.1		
	4995	SGMR	1 S	2003.3	2003.8	.7	7.8	3.1		
	2695	BOUL	8 S	2004	2005	1.5	6	2		
	2695	PENT	1 S	2204.5	2205	1	1.6	.8		
	1420	BOUL	1 S	2204	2204.5	2	3	1		
	2695	BOUL	1 S	2205.5	2206	1.5	2	1		
	1420	BOUL	1 S	2023.5	2024	1	1			
25	1415	MANI	3 S	0305.5	0308.9	7.3	33.9	22.6		
	2695	MANI	3 S	0305.8	0308.7	4.3	44.5	29.6		
	2930	VORO	3 S	0305	0309	15	80			
	500	HIRA	46 C	0306		14		6		
	500	HIRA		0306	0309.5		30			HR
	500	HIRA		0306	0316		20			HR
	606	MANI	3 S	0306.3	0309.6	5.3	35	23.5		
	200	HIRA	46 C	0306.5	0315	10.5	1200	200		0
	208	VORO	42 SER	0306	0315	11	320 D			
	4995	MANI	3 S	0307	0308.7	2.8	118.2	79.6		
	8800	MANI	3 S	0307.2	0308.7	2.4	151.2	100.8		
	5730	IRKU	45 C	0307	0308.2	4	83	45		HR
	5730	IRKU		0307	0309.1		130			HR
	35000	NAGO	5 S	0308	0309	2	50			
	35000	NAGO	30 PBI	0310	0310	10	5			
	606	MANI	3 S	0314.2	0316.2	4.8	22	14.7		
	2695	MANI	3 S	0314.5	0315.7	1.8	30.8	20.5		
	8800	MANI	3 S	0314.5	0315.2	1.7	14.4	9.6		
	1415	MANI	3 S	0314.6	0315.8	4.4	20.1	13.4		
	4995	MANI	3 S	0314.7	0315.2	1.5	17.9	11.9		
	5730	IRKU	2 S	0314	0315.3	3	29	9		
	35000	NAGO	5 S	0315	0315	2	20			HR
	100	HIRA	46 C	0317.8	0321	5	700	150		HL
	221	ABST	44 NS	0500	0732	240	10			
	200	GORK	44 NS	0533 E		374		5		
	127	TORN	44 NS	0710 E	1113.5	360	40 U			V=1
	260	ONDR	44 NS	0750 E		438 D	20			
	245	SGMR	44 NS	1130 E	2036.3	654 D	7.6			SWF
	3100	CRIM	3 S	0807	0810	6	27	9		
	1470	BERL	4	0807.5	0809.6	13	50			
	3000	BERL	4	0807.5	0809.2	9	46			
	1415	MANI	3 S	0807.8	0809.5	4.5	54.1	36		
	2650	OWIN	45 C	0807	0809	5	40	10		
	950	GORK	5 S	0808	0809.6	4.7	30	15		
	2695	MANI	3 S	0808	0809.5	3.2	44.5	29.6		
	127	TORN	28 PRE	0808.2	0809	2.5	17			
	127	TORN	47 GB	0810.7	0811.3	8.3	750 U	120		SERIES
	127	TORN		0810.7	0818.4	1.5	140			
	228	HARS	47 GB	0808.3	0811.7	4.6	3100 D	600 U		
	228	HARS		0808.3	0808.4	.2	37	15		
	228	HARS		0808.3	0809	.3	110	40		
	228	HARS		0808.3	0811	.5	800			
	228	HARS	29 PBI	0815.3	0816.5	3.5	22	10		
	650	GORK	3 S	0808.3	0809.4	5.5	29	7.5		
	100	GORK	41 F	0808.4	0809.3	16.4	60			
	100	GORK		0808.4	0813.5		1300			
	100	GORK		0808.4	0818.1		100			
	200	GORK	46 C	0808.5	0809.2	12.1	59			
	200	GORK		0808.5	0813.5		5100			
	9100	GORK	41 F	0808.8	0809.4	9.7	141			
	9100	GORK		0808.8	0814.8		36			
	8800	MANI	3 S	0808.8	0809.4	2	144	95.9		
	808	ONDR	3 S	0808	0809	12	32	9		
	536	ONDR	4 S/F	0808	0810	7	52	9.2		
	9500	BERL	4	0808	0809	12	87			
	260	ONDR	46 C	0808		12	226	44		
	15000	KISV	8 S	0809	0810	5	196			
	234	POTS	4	0809.1	0811.9	3.7	8800	160		
	4995	MANI	3 S	0809.1	0809.5	2.1	59.7	39.8		
	606	MANI	3 S	0809.1	0809.4	1.5	26.4	17.6		
	237	TRST	47 GB	0809.1	0811.4	3.2	14200			15L
	2950	GORK	3 S	0809.2	0809.4	.8	36	18		

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	202	IZMI	45	C	0811	0812	2.5	2780	680		
	113	POTS	4		0811.5	0812.3	1.3	2000	500		
	15000	KISV	4	S/F	0814	0815	5	90			
	536	ONDR	45	C	0820	0825.5	11	13	8.8		
	15000	KISV	1	S	1030	1031	5	34			
	9500	BERL	2		1158.5	1159	4.5	5.5			
	3000	BERL	4		1158.5	1159	4	8.8			
	1470	BERL	2		1158.5	1159	3	2.8			
	2650	OWIN	40	F	1158	1200	4	6	3		
	2695	SGMR	3	S	1301.2	1304.3	6.9	10.5	3.2		
	9500	BERL	2		1302.5	1304	5.5	5.5			
	8800	SGMR	1	S	1302.8	1304.1	5.1	8.4	2.5		
	4995	SGMR	3	S	1302.9	1304.3	5.1	12	3.6		
	3000	BERL	4		1302	1304	8	14			
	2800	OTTA	4	S/F	1302	1304.5	6	10.4	3.5		
	1470	BERL	2		1302	1304.3	4	3.3			
	2650	OWIN	40	F	1302	1304	5	10	5		
	1415	SGMR	3	S	1443.2	1450.6	31.7	244	73.2		SWF
	4995	SGMR	3	S	1447.1	1450.7	19.2	164	49.2		SWF
	4995	BCUL	8	S	1447.5	1450	17	142	49		
	2695	SGMR	3	S	1447.5	1450.8	16	187	56.1		SWF
	10500	BERN	4	SF	1447.5	1450.4	30	303			OPR
	1420	ARCE	4	S/F	1447.6	1450.5	6.6				
	1420	ARCE	29	PBI	1454.2	1454.6	11				
	1420	BCUL	3	S	1448.5	1451	15	167	58		
	2695	BOUL	3	S	1448.5	1452	8.5	98	33		
	410	SGMR	49	GB	1448.7	1450.3	24.1	2890	867		SWF
	8800	SGMR	3	S	1448.9	1450.3	15.3	314	94.2		SWF
	2800	OTTA	4	S/F	1448	1450.5	6	144	30.2		
	2800	OTTA	30	PBI	1454	1454	16	4.2	2.1		
	2650	OWIN	45	C	1448	1451	7	148 D			
	930	BORD	46	C	1448	1450.8	21	122	12		
	536	ONDR	46	C	1448		19	53	15		
	9400	HUAN	45	C	1449	1451.7	2.7	284.9	108		L
	9400	HUAN	29	PBI	1451.7	1511.4	59.7	33.9	12.5		L
	606	SGMR	4	S/F	1449	1450.6	21.2	201	60.3		SWF
	15400	SGMR	3	S	1449.1	1450.7	15.6	333	99.9		SWF
	9100	ARCE	4	S/F	1449.5	1450.6	2.9				
	9100	ARCE	29	PBI	1452.4	1502.7	45				
	245	SGMR	49	GB	1449.6	1453.9	24	7790	2340		SWF
	808	ONDR	4	S/F	1449	1450.5	5	88	56		
	228	HARS	47	GB	1450	1453 U	4.6	3100 D	1500 U		
	228	HARS			1450	1450.5	.8	2800 U	900 U		
	228	HARS			1450	1451.6	.2	260	130		
	228	HARS			1450	1452.1	.2	320	160		
	228	HARS	29	PBI	1501	1505	12	110	45		
	237	TRST	41	F	1450.2E	1450.2	.2D	435			14L
	127	TORN	47	GB	1450.2	1453.5U	4.5	680 D	140 U		SATURATED
	237	TRST	47	GB	1451.6	1453.8	16.9	8450			22L
	2800	OTTA	40	F	1456	1457.5	7	21			
	127	TORN	45	C	1457.5	1458.4	3	490 U	190		SUNSET
	808	ONDR	45	C	1458	1501	4	45	11		
	260	ONDR	46	C	1459		17	226	43		
	2800	OTTA	1	S	1652.8	1653.3	3	2.8	1.5		
	2800	OTTA	240	R	2105	2113	8	2	1		
	2695	PENT	1	S	2310.2	2310.8	1	.8	.4		
26	5730	IRKU	45	C	0230	0230.5	2	12	4		WR
	5730	IRKU			0230	0231		8			WR
	221	ABST	44	NS	0500	0612	240	12			
	200	GORK	44	NS	0718 E		276		5		
	221	ABST	43	NS	0721.2	0731.8	25	18			
	260	ONDR	44	NS	0758 E		448 D	145	5		
	410	SGMR	43	NS	1245	1415	580 D	60			
	245	SGMR	43	NS	1245	1256.1	580 D	44.7			
	5730	IRKU	45	C	0607.5	0617.8	4.5	10	3		WR
	5730	IRKU			0607.5	0619.5		6			WR
	15000	KISV	29	PBI	0617	0619	23	136			
	4995	MANI	3	S	0617.7	0617.8	.6	12.5	8.3		
	606	MANI	3	S	0618	0621	4.5	8.2	5.5		
	1415	MANI	3	S	0618.5	0621	3.3	23.8	15.8		
	8800	MANI	3	S	0618.5	0619	2	23.4	15.6		
	2695	MANI	3	S	0618.5	0618.8	3.3	16.2	10.8		
	9100	GORK	1	S	0619.1	0619.4	1.9	20.3	10		
	1415	MANI	1	S	0746	0746.7	1.5	8.8	6.2		
	5730	IRKU	1	S	0746.4	0746.5	.5	6			WR
	2695	MANI	3	S	0746.5	0746.7	1	11.8	7.8		
	606	MANI	3	S	0746.5	0746.7	.6	13.7	9.6		
	4995	MANI	3	S	0746.6	0746.7	.2	12.5	8.3		
	237	TRST	41	F	0746.6	0746.7	.3	85			D
	650	GORK	41	F	0746.8	0747	5.2	8			
	650	GORK			0746.8	0750.6		92			
	650	GORK			0746.8	0751.4		8			
	930	BORD	41	F	0746	0749.8	7	200	5		
	950	GORK	45	C	0749.6	0750.2	2.6	107			

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OUTSTANDING OCCURRENCES

FEBRUARY 1978

FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	950	GORK		0749.6	0751.9		52			
	2695	MANI	1 S	0749.7	0750.3	.9	1.5	.7		
	1415	MANI	1 S	0749.7	0750.3	.9	1.0	.8		
	606	MANI	3 S	0749.7	0750.2	.9	34.2	22.8		
	408	TRST	42 SER	0953.2	0953.2	.3	36			
	536	ONDR	8 S	1005.5	1005.5	.3	234			
	408	TRST	42 SER	1005.9	1006	.9	330			
	237	TRST	5 S	1006	1006	.1	170 D			D
	1420	ARCE	40 F	1024.4	1024.8	3				
	1470	BERL	2	1024.5	1025	1	3.9			
	9500	BERL	20	1125	1136	19	4.1			
	127	TORN	45 C	1134.2	1134.3	1.2	85	17		
	228	HARS	45 C	1134.9	1135	1.1	225	70		
	408	TRST	7 C	1135.2	1135.3	1	150 D			
	237	TRST	42 SER	1135.2	1135.3	1.1	765			9L
	234	POTS	4	1135.2	1135.2	1.1	200	3		
	1420	ARCE	1 S	1135.7	1135.9	5				
	1470	BERL	2	1136	1136.1	.5	2.8			
	3000	BERL	2	1136	1136	.5	2.7			
	536	ONDR	3 S	1141.3	1141.3	.2	34			
	536	ONDR	1 S	1147.2	1147.2	.2	12			
	127	TORN	40 F	1249 U	1253	10 U	28			
	127	TORN	46 C	1409	1412.6	10.5	270			PEAKING
	2695	SGMR	1 S	1410.4	1414.9	6.1	5.7	1.7		
	1415	SGMR	1 S	1410.6	1411.6	6.9	5.6	1.7		
	3000	BERL	4	1410	1414	6	6.8			
	9500	BERL	20	1410	1414	10	6.9			
	1470	BERL	4	1410	1411.6	6	6.2			
	237	TRST	42 SER	1411.1	1411.8	2.9	285			4L
	237	TRST		1411.1	1412.5		480			4L
	237	TRST		1411.1	1413.4		440			5L
	228	HARS	45 C	1411.5	1413.2	2	330	70		
	113	POTS	4	1411.6	1413.2	2.1	120	1		
	4995	SGMR	1 S	1411.6	1414.2	3.8	9.6	2.9		
	234	POTS	4	1411.7	1413.6	2.1	200	1		
	8800	SGMR	3 S	1411.9	1412	3.3	10.5	3.2		
	2800	OTTA	20 GRF	1555	1603	18	1.8	.9		
	18	MCMA	6 S	2101	2103	2			1	
	9400	HUAN	1 S	2123.5	2124.8	1.3	20.8	6.6		D
	2695	MANI	3 S	2325.7	2327.5	2.8	38.6	20.4		
	1415	MANI	3 S	2325.7	2327.5	3	14.4	9.6		
	4995	BCUL	8 S	2325	2327	4.5	27	9		
	2695	PENT	3 S	2325	2327.5	6	37.4	12.5		
	2695	PENT	29 PBI	2331	2331	22	4.8			
	4995	MANI	3 S	2326.3	2327.5	2.3	36.6	24.4		
	500	HIRA	46 C	2326.7	2327.7	1.7	23	5		D
	606	MANI	1 S	2326.8	2327.6	1.2	7.5	4.9		
	1420	BCUL	8 S	2326	2327	2.5	12	4		
	2695	BOUL	8 S	2326	2329	14	40	13		
	8800	MANI	1 S	2327	2327.5	1.3	9.5	6.4		
	1420	BCUL	3 S	2350	2356.5	10.5	19	6		
	2695	BOUL	3 S	2357.5	0004	11	42	14		
	4995	BCUL	3 S	2359.5	0001.5	10	25	8		
27	2930	VORO	45 C	0000	0004	10	24			
	2695	PENT	4 S/F	0001.7	0002.7	4	13.6	6.8		
	4995	MANI	3 S	0001.7	0002.6	3.3	27.4	18.3		
	2695	MANI	3 S	0001.8	0002.6	4	15.3	10.2		
	8800	MANI	3 S	0001.9	0002.6	1.3	23.8	15.9		
	1415	MANI	1 S	0001.9	0002.7	2.9	9.9	6.6		
	208	VORO	4 S/F	0104	0104.8	1.7	250			
	200	HIRA	27 RF	0255	0324	75	15	5		ML
	508	HIRA	27 RF	0256	0300.6	14	3	2		SL
	100	HIRA	27 RF	0305	0343	120	130	3		ML
	35000	NAGO	22 GRF	0310	0319	25	6			
	500	HIRA	41 F	0348	0450	130	250			SL
	606	MANI	41 F	0559.9	0604.9	5.3	82.6	47.2		
	1415	MANI	41 F	0559.9	0600.1	5.3	31.6	20.1		
	2695	MANI	41 F	0559.9	0600.4	5.3	6.8	3.4		
	650	GORK	3 S	0600	0600.7	3	7	3		
	200	HIRA	7 C	0600	0600	1.5	1800	150		D
	950	GORK	5 S	0601	0607	3.3	19	9.5		
	100	HIRA	46 C	0601 E	0601 U	5 D	370 U	150 U		D
	2950	GORK	1 S	0602	0607	1.7	8.3	4.1		
	100	GORK	43 NS	0806		120		5		
	245	SGMR	44 NS	1127 E	1706.5	659 D	3.6			CONT
	33	UFIC	45 C	1139.6	1140.4	1.5				
	29	UPIC	45 C	1139.8	1140.5	1.5				
	100	GORK	4 S/F	1236.5	1236.7	.8	80	40		
	2800	OTTA	20 GRF	1245	1255	265	3	1.5		
	10500	BERN	8 S	1615.3	1615.4	.3	35			OPR
	2800	OTTA	24 R	1750	1810	20	2.4	1.2		
	2800	OTTA	27F RF	1750		300	2.4	2.1		
	18	MCMA	41 F	1807	1808	5			1	
	2800	OTTA	24P R	1810		230	2.4			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

FEBRUARY 1978

FEB 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	18	MCMA	41 F	1903	1904	4			1	
	2800	OTTA	26 FAL	2200	2250	50	-2.4	-1.2		
	1420	BOUL	3 S	2351.5	2357.5	12	15	5		
	2695	BCUL	3 S	2359	0003	14	12	4		
28	221	ABST	44 NS	0500	0702	240	9			
	260	ONDR	44 NS	0750 E		332	24			
	200	GORK	43 NS	0900		147		5		
	245	SGMR	44 NS	1125 E	1246	395 D	9.2			
	606	MANI	8 S	0612.3	0612.7	.7	155.1	99		
	1415	MANI	1 S	0612.6	0612.7	.2	4.9	2.9		
	3100	CRIM	31 ABS	0735	0738	34	7	2		
	2800	OTTA	20 GRF	1250	1400	205	5	3		
	18	MCMA	6 S	1340	1341	2			1	
	930	BORO	8 S	1508	1508.1	.2	21	2		
	2800	OTTA	20 GRF	1914	1916	12	3.6	1.8		

Reports received from the following observatories:

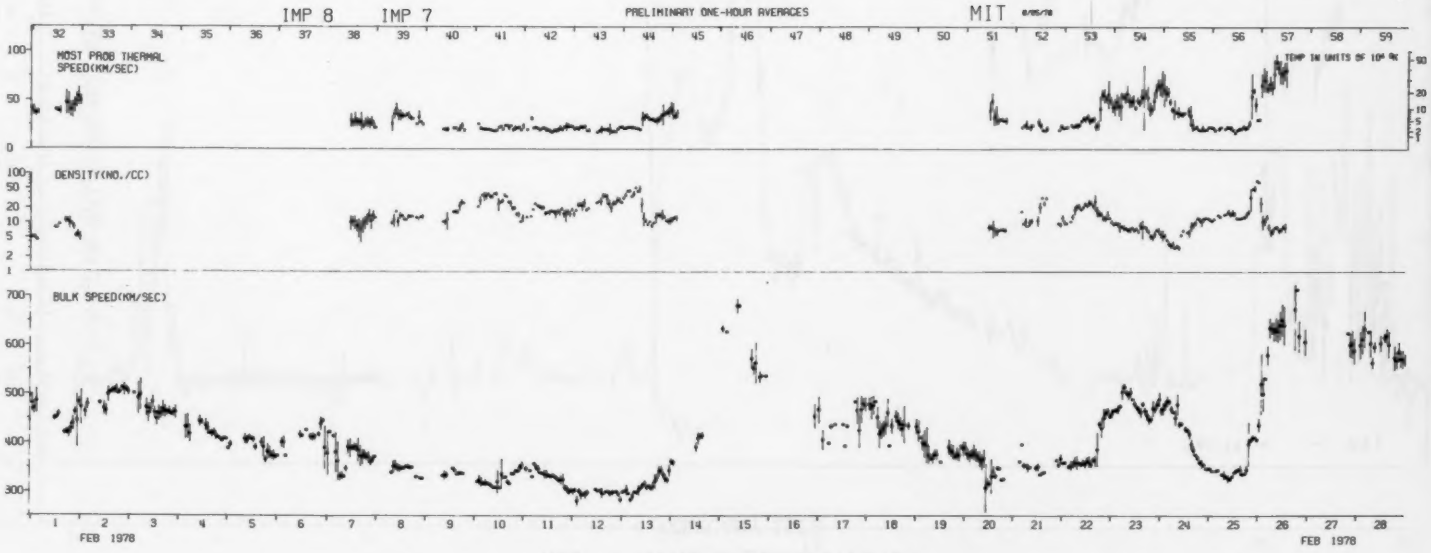
ARCE = Arcetri
BERL = Berlin-Adlershof
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
NAGO = Nagoya
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

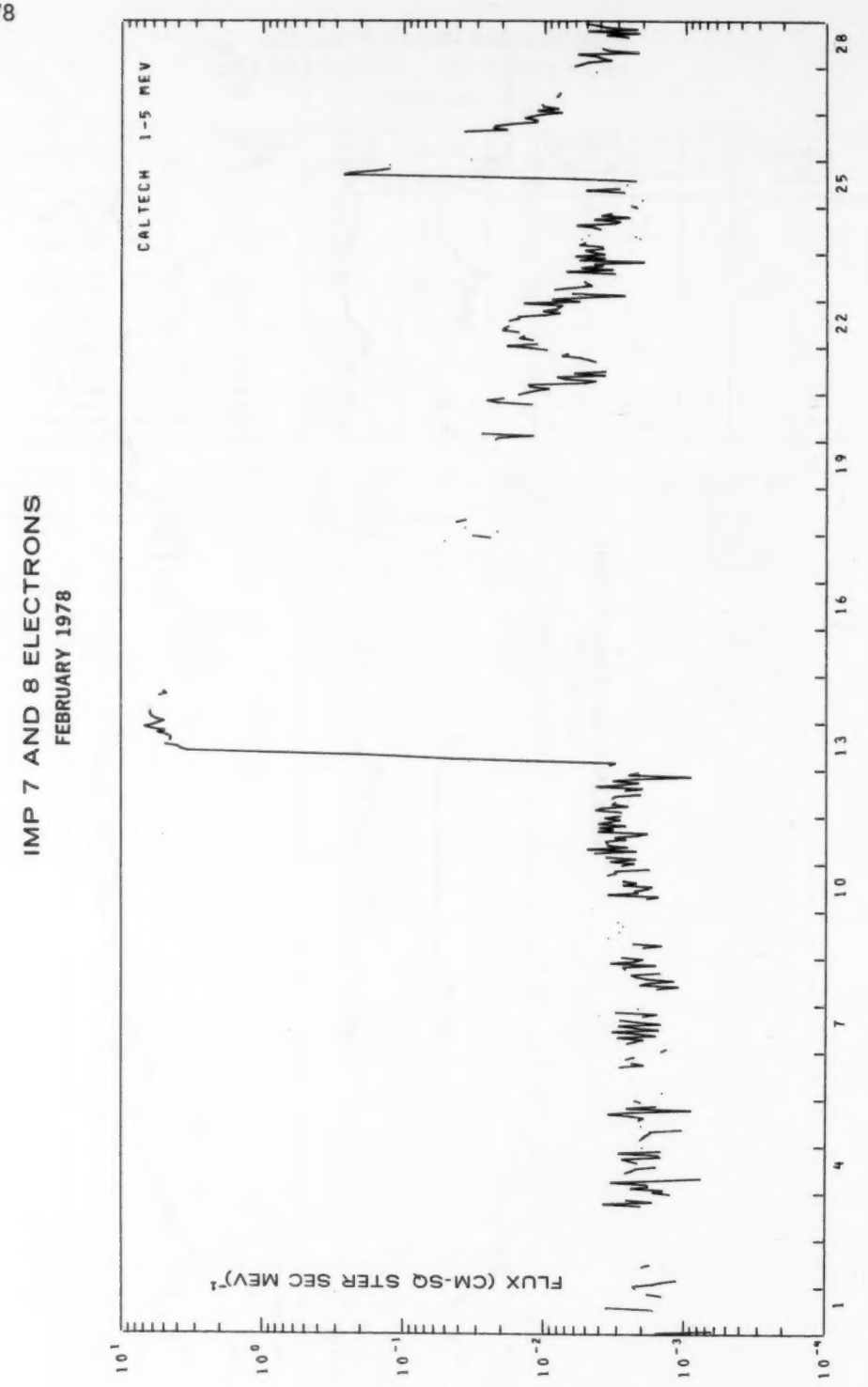
Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

IMP 7 AND 8 SOLAR WIND PLASMA

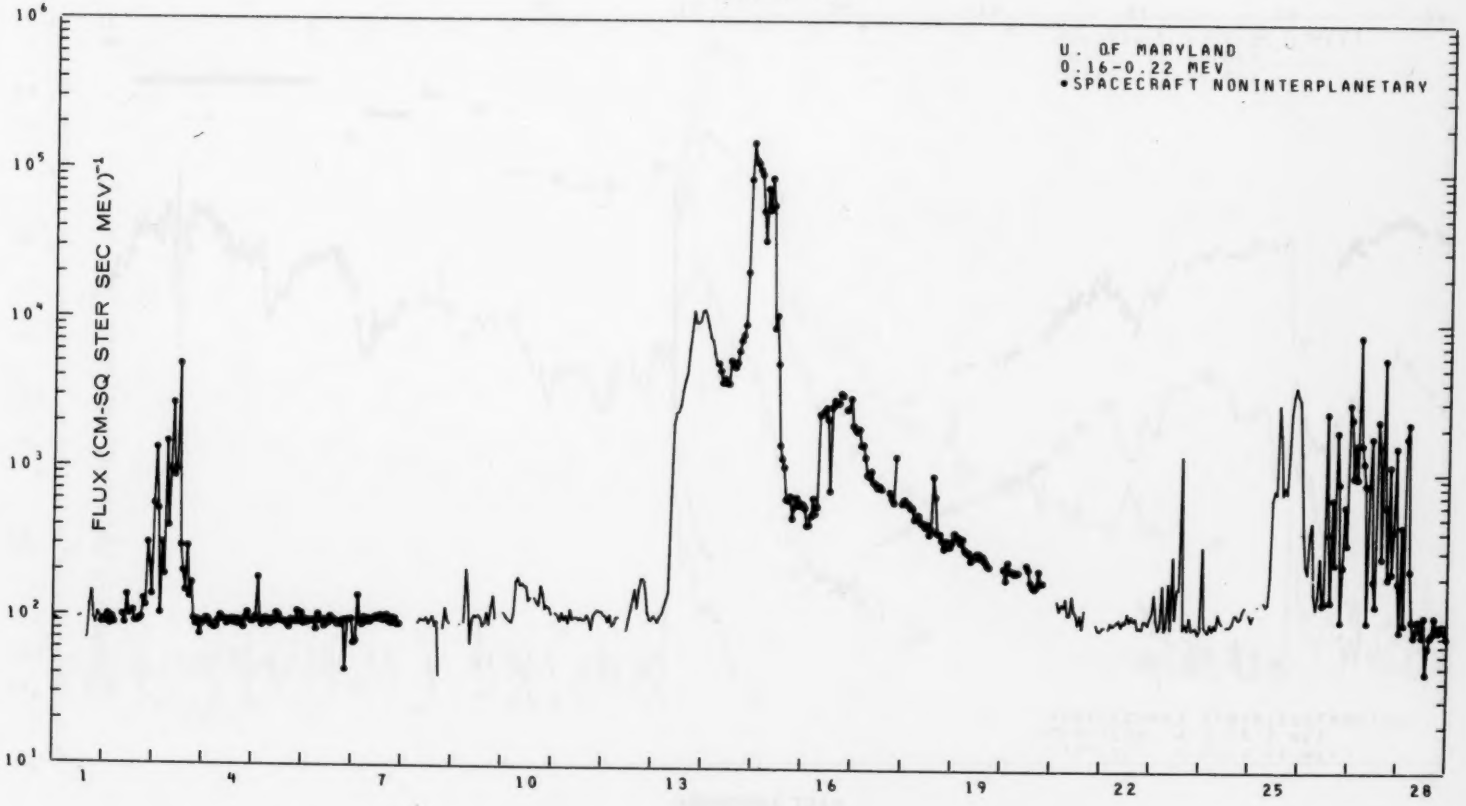
FEBRUARY 1978




IMP 7 AND 8 ELECTRONS
FEBRUARY 1978
CALTECH 1-5 MEV
FLUX (CM-SQ STER SEC MEV)⁻¹
10¹
10⁰
10⁻¹
10⁻²
10⁻³
10⁻⁴
1
4
7
10
13
16
19
22
25
28

IMP 7 AND 8 LOW ENERGY PROTONS

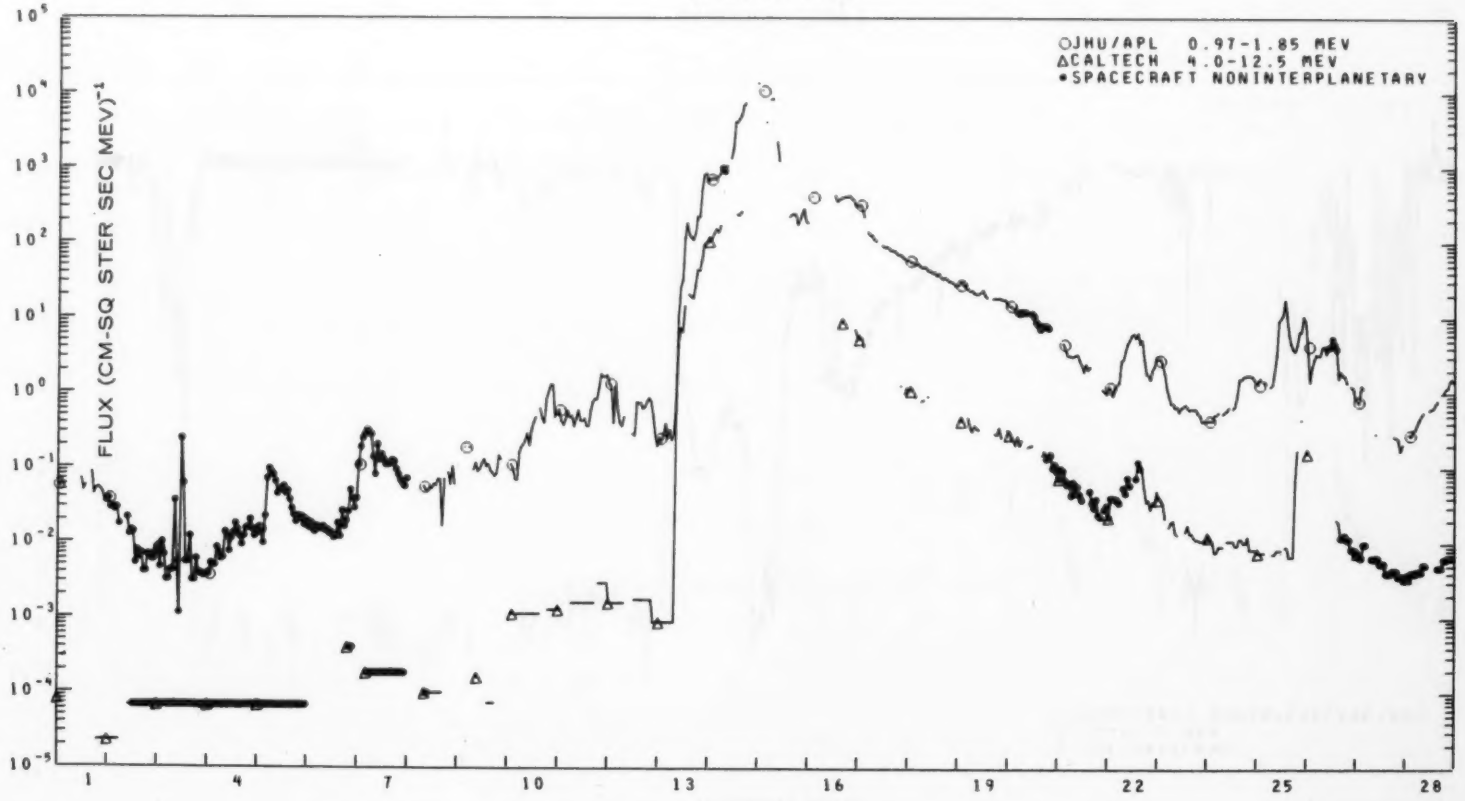
FEBRUARY 1978



63
Feb 78

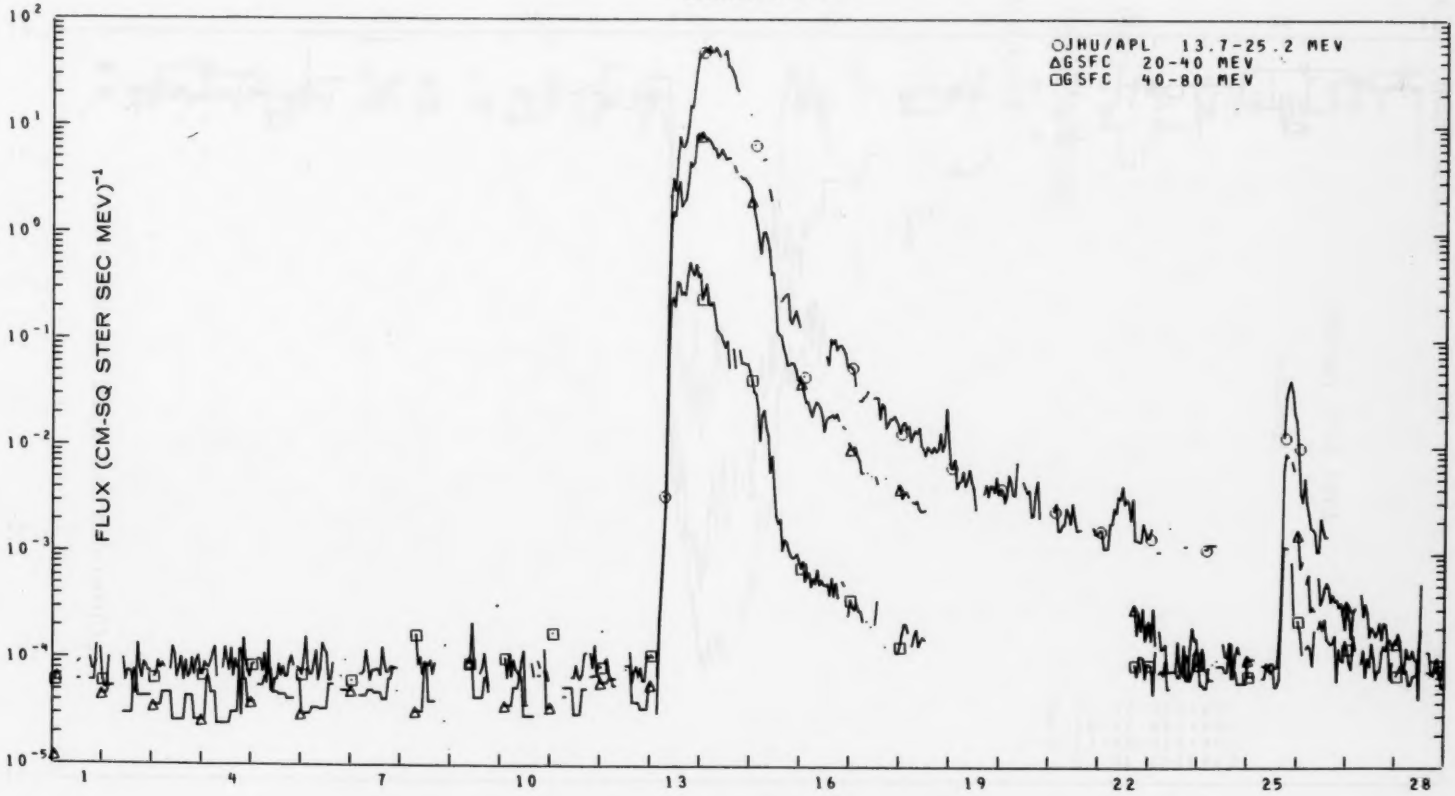
IMP 7 AND 8 INTERMEDIATE ENERGY PROTONS

FEBRUARY 1978

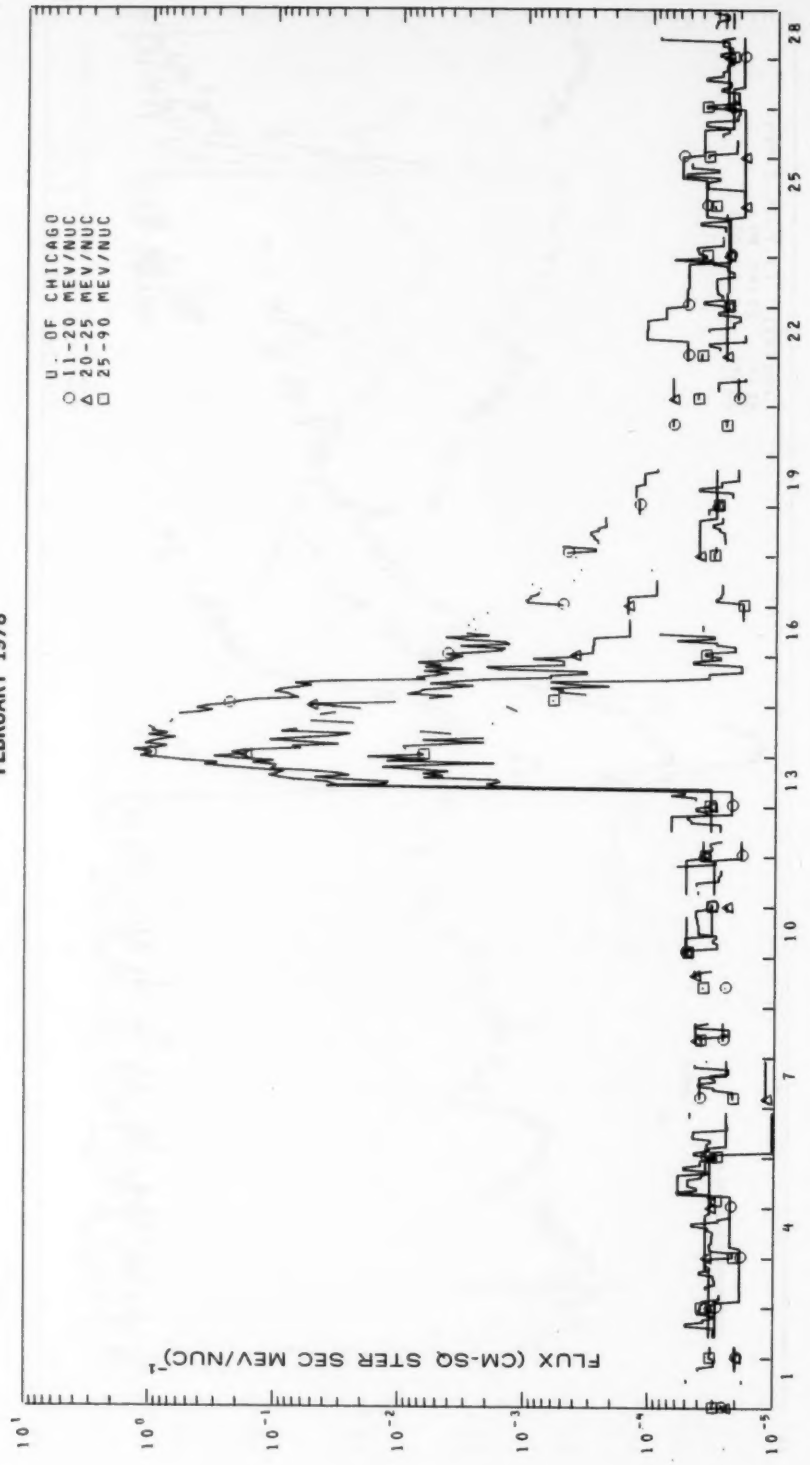


IMP 7 AND 8 HIGH ENERGY PROTONS

FEBRUARY 1978



65
Feb 78


IMP 7 AND 8 ALPHA PARTICLES
FEBRUARY 1978
U. OF CHICAGO
11-20 MEV/NUC
20-25 MEV/NUC
25-90 MEV/NUC
FLUX (CM-SQ STER SEC MEV/NUC)$^{-1}$
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
1
4
7
10
13
16
19
22
25
28

JANUARY 1978 DATA

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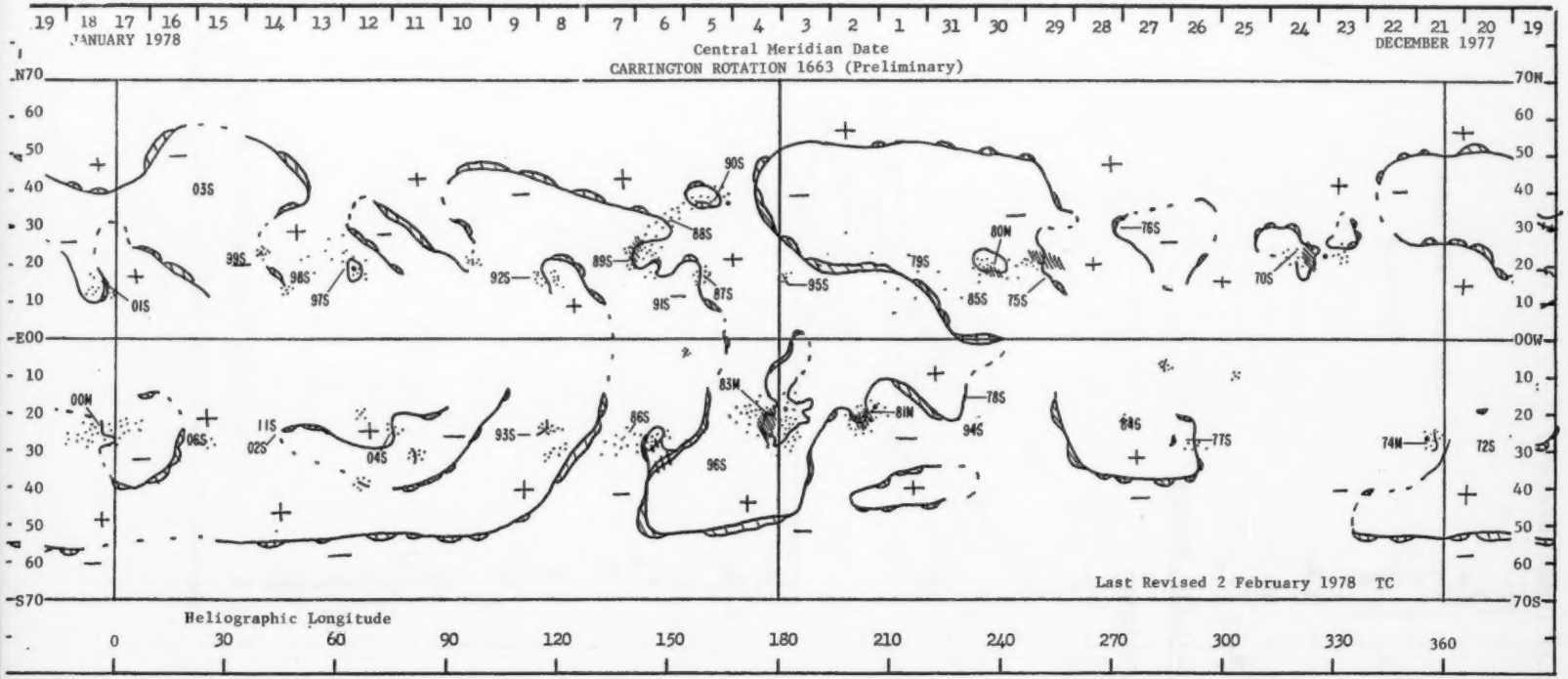
Regional Flare Index	77

ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

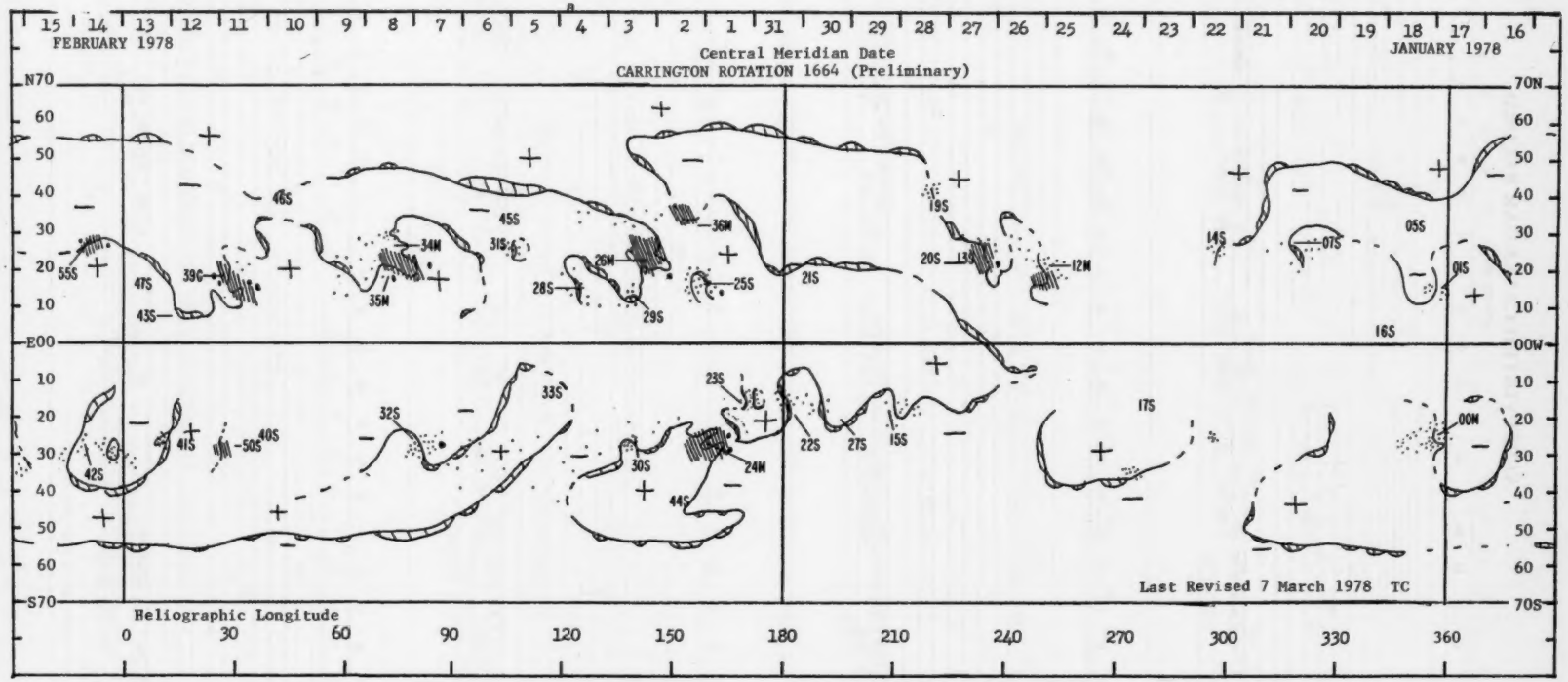
CARRINGTON ROTATION 1663 (PRELIMINARY)



ABBREVIATED CALENDAR RECORD

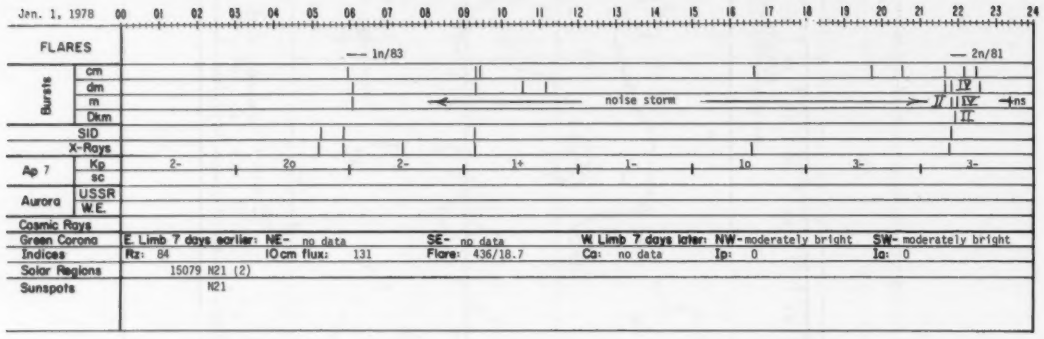
Hα SYNOPTIC CHART

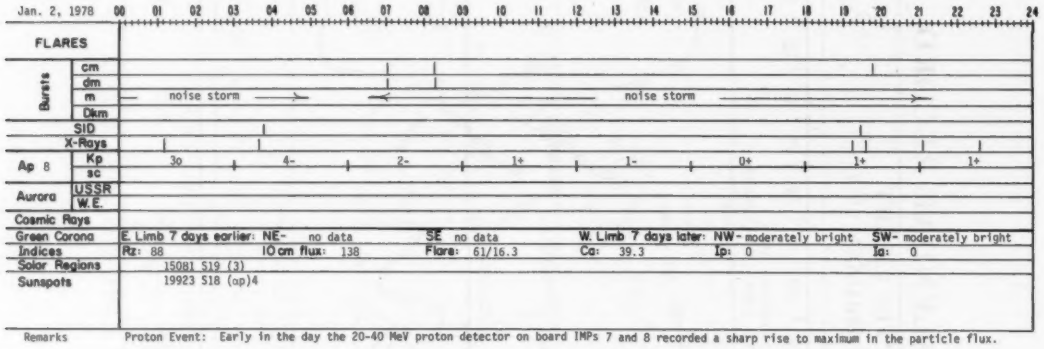
JANUARY - FEBRUARY 1978



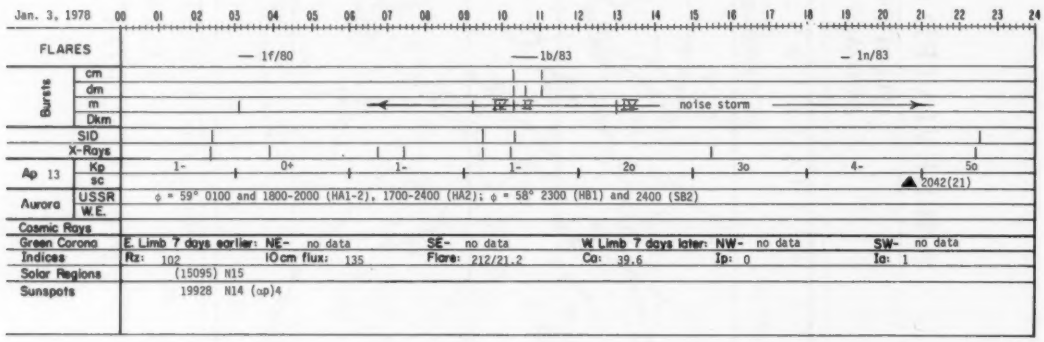
ABBREVIATED CALENDAR RECORD

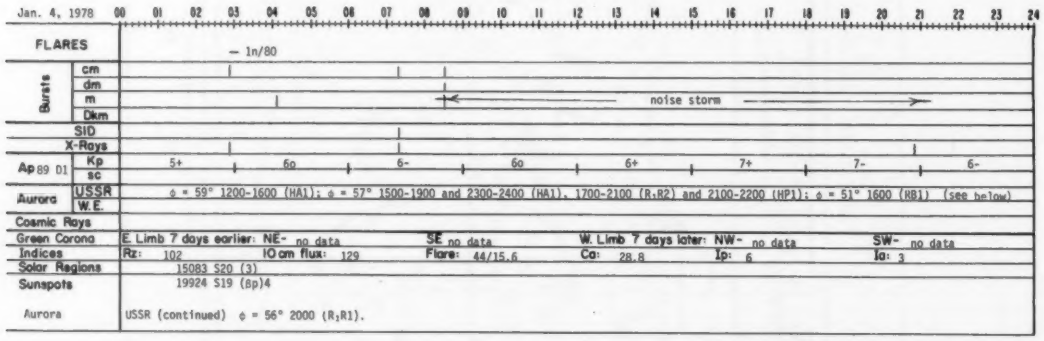
JANUARY 1978



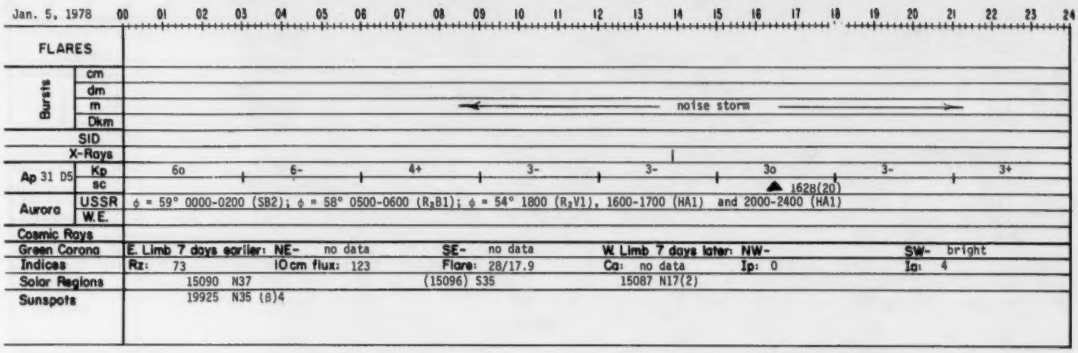


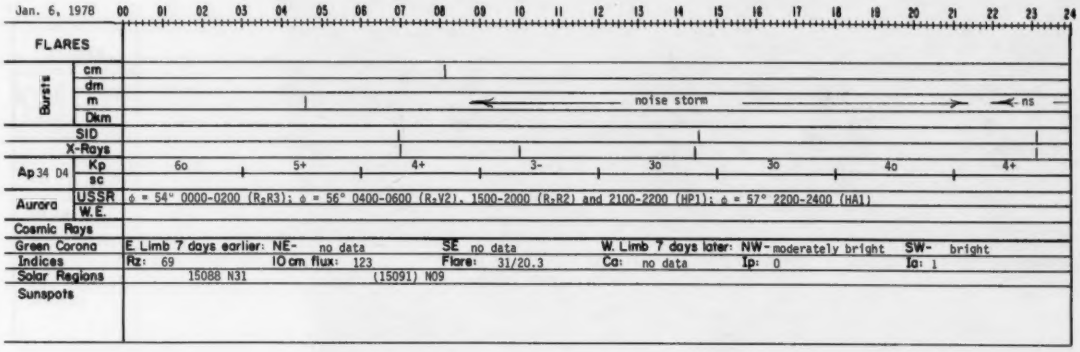
Remarks Proton Event: Early in the day the 20-40 MeV proton detector on board IMPs 7 and 8 recorded a sharp rise to maximum in the particle flux.

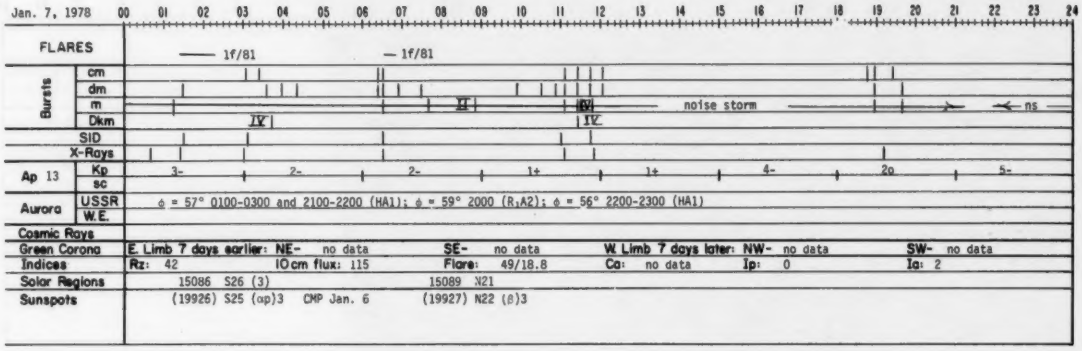


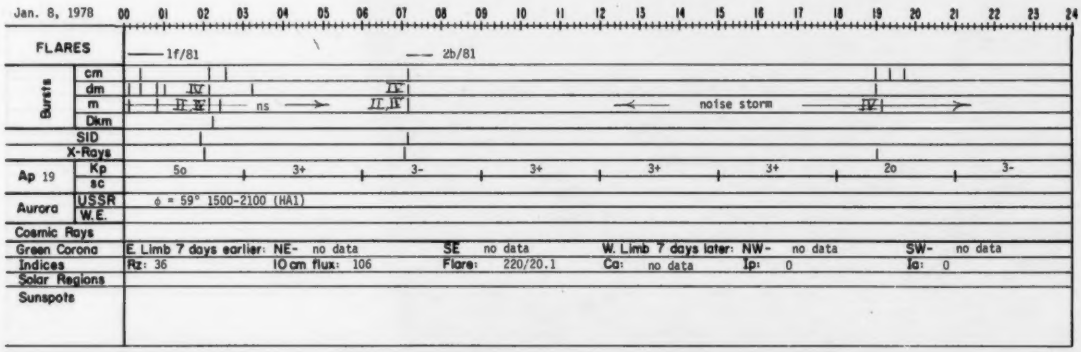


Aurora USSR (continued) ϕ = 56° 2000 (R_1R1).


Jan. 5, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 31 D5
Kp
6o 6- 4+ 3- 3- 3o 3- 3+
sc
1628(20)
Aurora
USSR
φ = 59° 0000-0200 (SB2); φ = 58° 0500-0600 (R₂B1); φ = 54° 1800 (R₂V1), 1600-1700 (HA1) and 2000-2400 (HA1)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW- bright
Indices
Rz: 73 10cm flux: 123 Flare: 28/17.9 Ca: no data Ip: 0 Ia: 4
Solar Regions
15090 N37 (15096) S35 15087 N17(2)
Sunspots
19925 N35 (β)4


Jan. 6, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
noise storm
ns
Dkm
SID
X-Rays
Ap 34 D4
Kp
6o 5+ 4+ 3- 3o 3o 4o 4+
sc
Aurora
USSR
φ = 54° 0000-0200 (R₂R3); φ = 56° 0400-0600 (R₂V2), 1500-2000 (R₂R2) and 2100-2200 (HP1); φ = 57° 2200-2400 (HA1)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- moderately bright SW- bright
Indices
Rz: 69 10cm flux: 123 Flare: 31/20.3 Ca: no data Ip: 0 Ia: 1
Solar Regions
15088 N31 (15091) N09
Sunspots


Jan. 7, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/81
1f/81
Bursts
cm
dm
m
noise storm
ns
Dkm
SID
X-Rays
Ap 13
Kp
3- 2- 2- 1+ 1+ 4- 2o 5-
sc
Aurora
USSR
φ = 57° 0100-0300 and 2100-2200 (HA1); φ = 59° 2000 (R₁A2); φ = 56° 2200-2300 (HA1)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 42 10cm flux: 115 Flare: 49/18.8 Ca: no data Ip: 0 Ia: 2
Solar Regions
15086 S26 (3) 15089 N21
Sunspots
(19926) S25 (αp)3 CMP Jan. 6 (19927) N22 (β)3


Jan. 8, 1978
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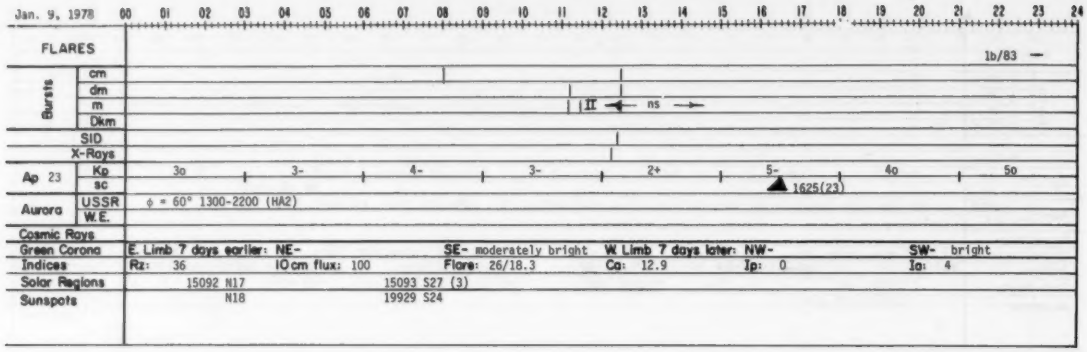
FLARES
1f/81
2b/81
Bursts
cm
dm
m
ns
noise storm
Dkm
SID
X-Rays
Ap 19
Kp
5o 3+ 3- 3+ 3+ 3+ 2o 3-
sc
Aurora
USSR
φ = 59° 1500-2100 (HA1)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 36 10cm flux: 106 Flare: 220/20.1 Ca: no data Ip: 0 Ia: 0
Solar Regions
Sunspots


Jan. 9, 1978
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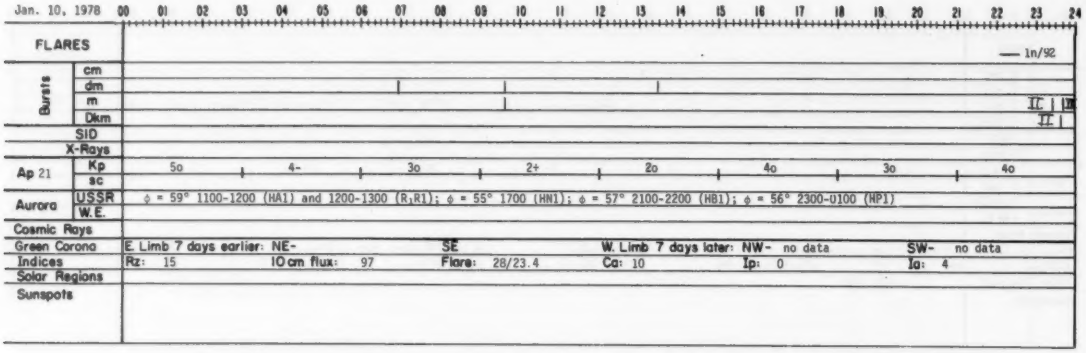
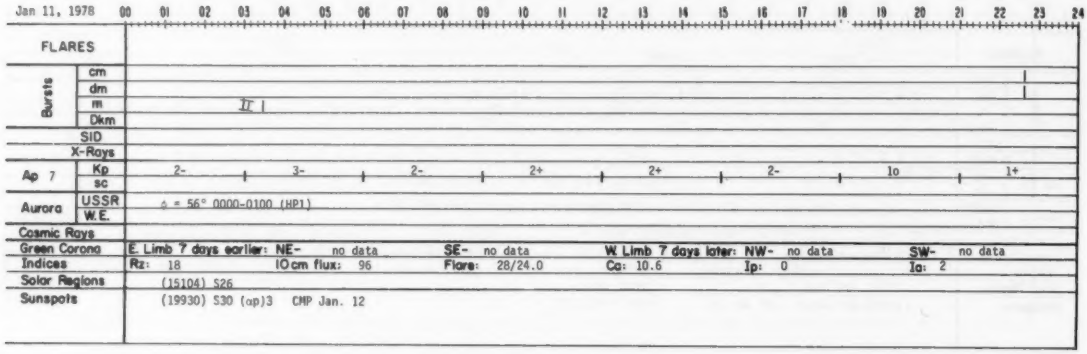
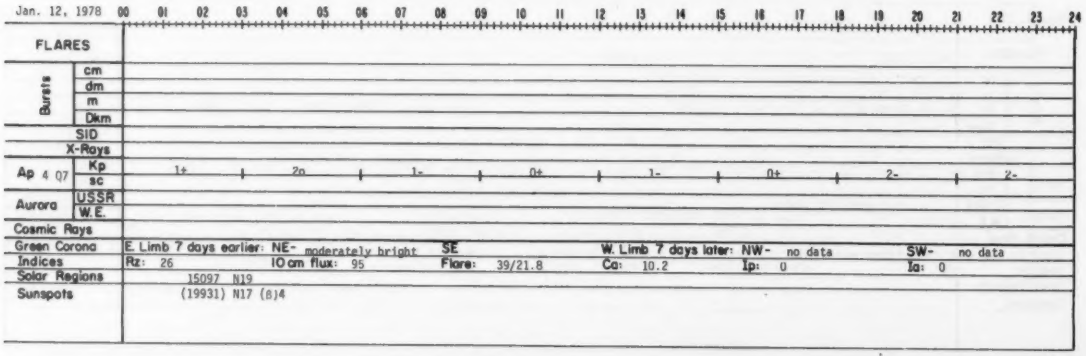
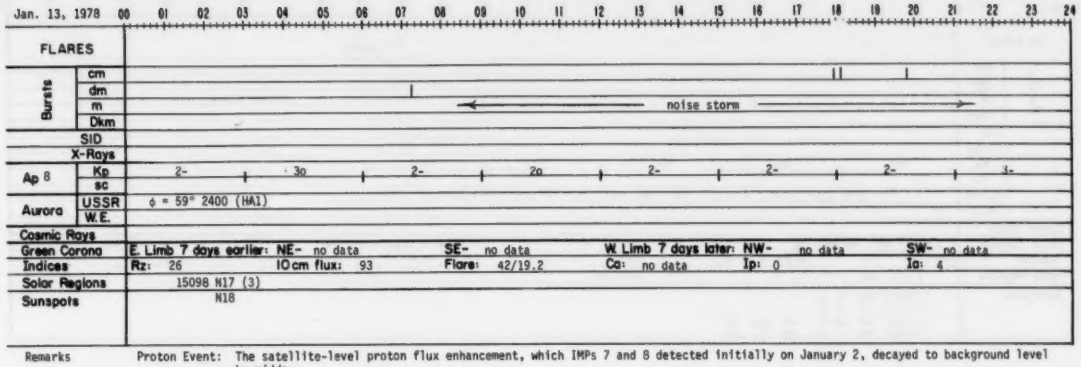
FLARES
1b/83
Bursts
cm
dm
m
Dkm
II
ns
SID
X-Rays
Ap 23
Kp
sc
3o 3- 4- 3- 2+ 5- 4o 5o
1625(23)
Aurora
USSR
W.E.
ϕ = 60° 1300-2200 (HA2)
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE- moderately bright
W. Limb 7 days later: NW-
SW- bright
Indices
Rz: 36
10cm flux: 100
Flare: 26/18.3
Ca: 12.9
Ip: 0
Ia: 4
Solar Regions
15092 N17
15093 S27 (3)
Sunspots
N18
19929 S24

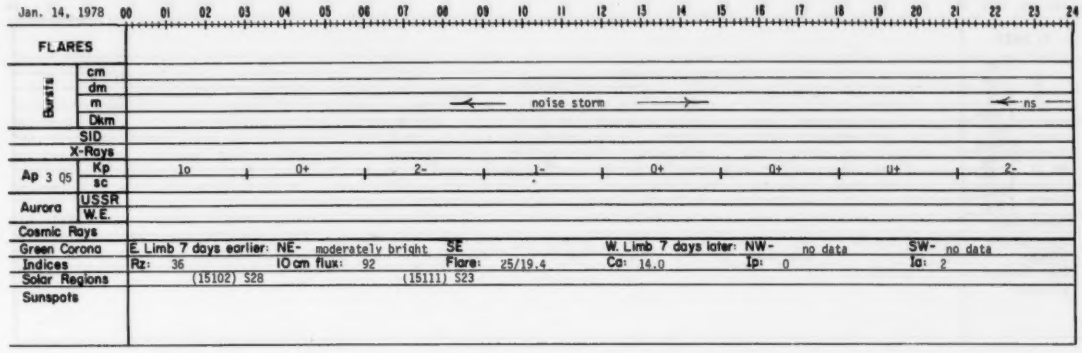

Jan. 10, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/92
Bursts
cm
dm
m
Dkm
II
SID
X-Rays
Ap 21
Kp
sc
5o 4- 3o 2+ 2o 4o 3o 4o
Aurora
USSR
W.E.
ϕ = 59° 1100-1200 (HA1) and 1200-1300 (R1R1); ϕ = 55° 1700 (HN1); ϕ = 57° 2100-2200 (HB1); ϕ = 56° 2300-0100 (HP1)
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 15
10cm flux: 97
Flare: 28/23.4
Ca: 10
Ip: 0
Ia: 4
Solar Regions
Sunspots

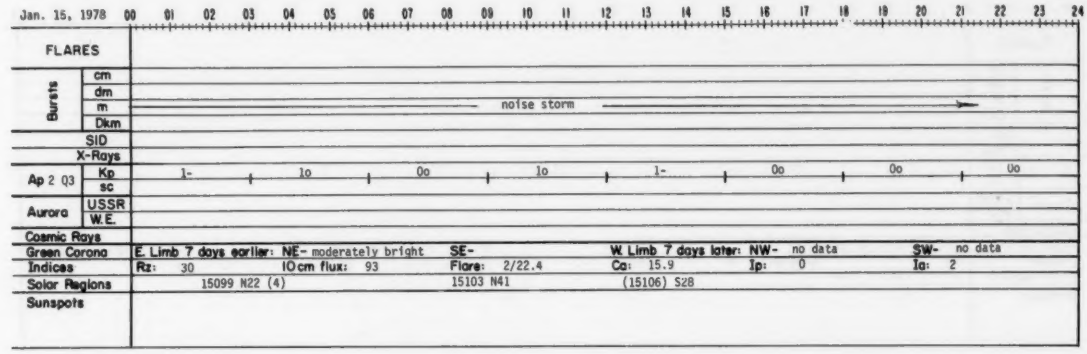

Jan 11, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
II
Dkm
SID
X-Rays
Ap 7
Kp
sc
2- 3- 2- 2+ 2+ 2- 1o 1+
Aurora
USSR
W.E.
ϕ = 56° 0000-0100 (HP1)
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data
SE- no data
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 18
10cm flux: 96
Flare: 28/24.0
Ca: 10.6
Ip: 0
Ia: 2
Solar Regions
(15104) S26
Sunspots
(19930) S30 (ap)3 CMP Jan. 12

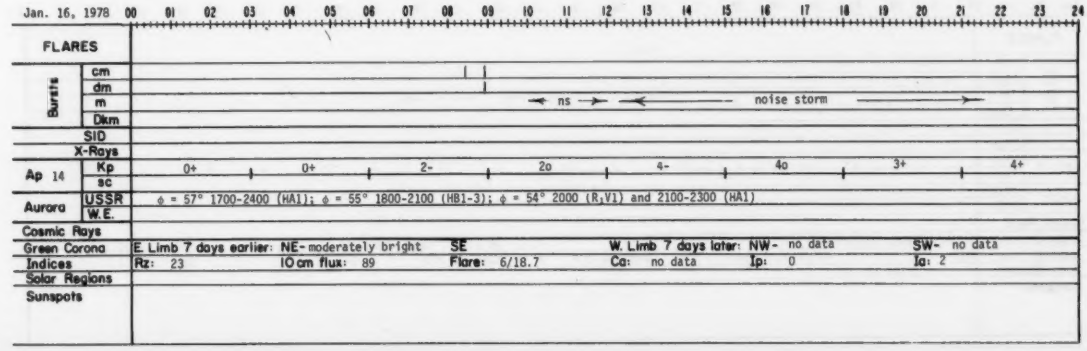

Jan. 12, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 4 07
Kp
sc
1+ 2o 1- 0+ 1- 0+ 2- 2-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright
SE
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 26
10cm flux: 95
Flare: 39/21.8
Ca: 10.2
Ip: 0
Ia: 0
Solar Regions
15097 N19
Sunspots
(19931) N17 (β)4

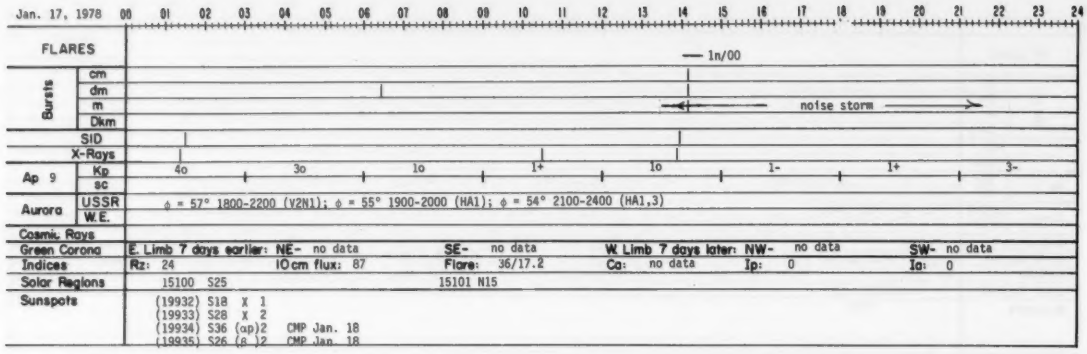


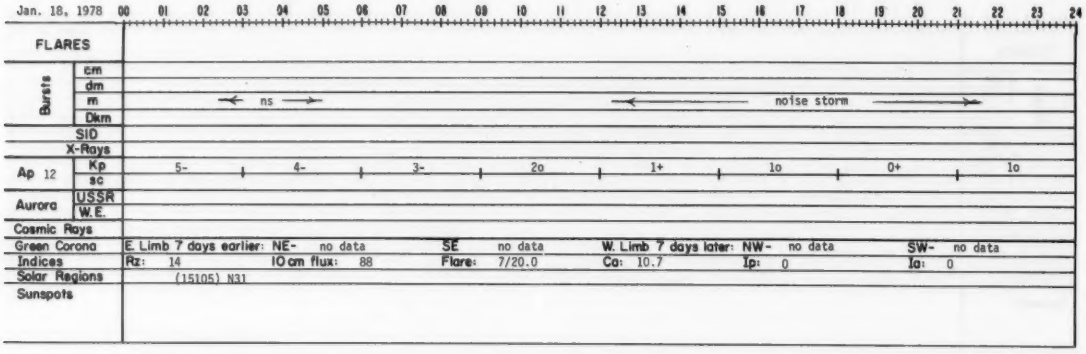
Remarks Proton Event: The satellite-level proton flux enhancement, which IMPs 7 and 8 detected initially on January 2, decayed to background level by midday.

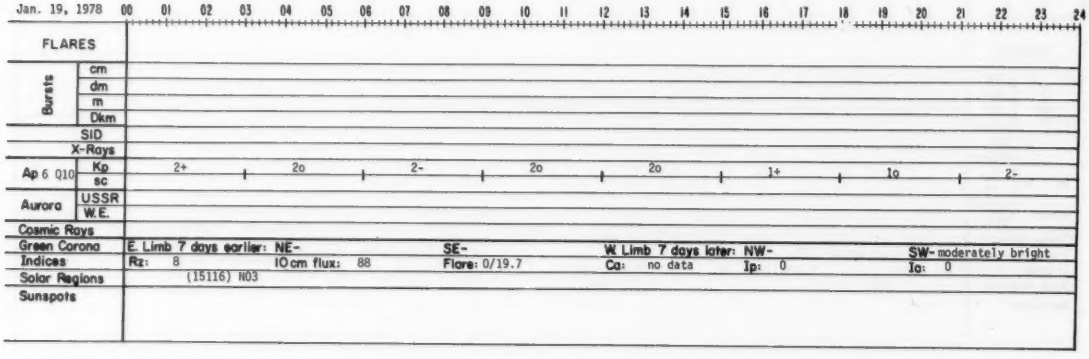


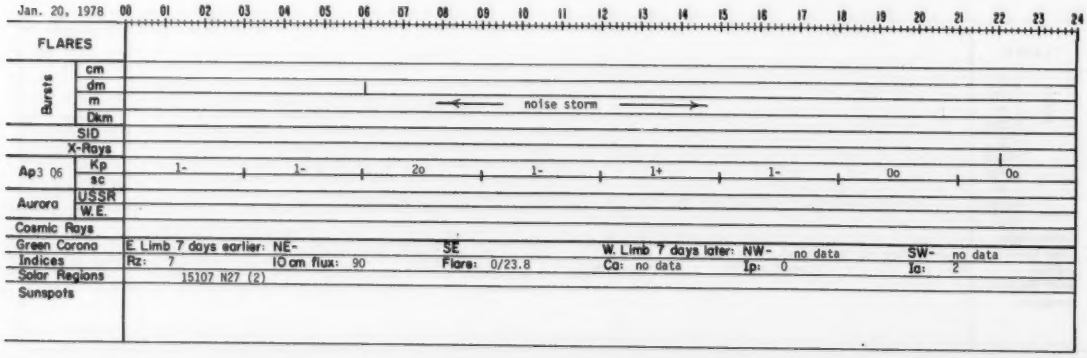


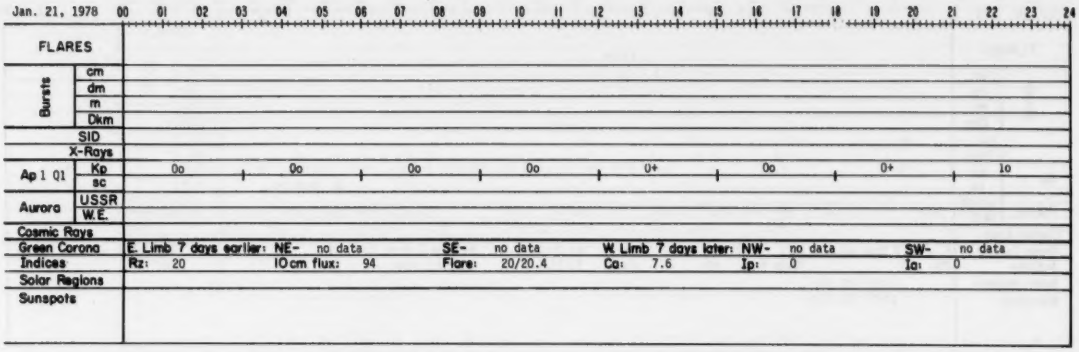


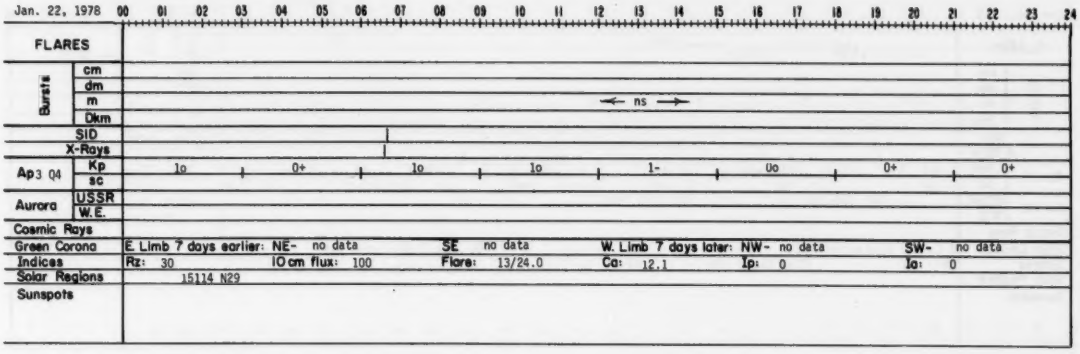

Jan. 17, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/00
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 9
Kp
sc
4o 3o 1o 1+ 1o 1- 1+ 3-
Aurora
USSR
W.E.
ϕ = 57° 1800-2200 (Y2N1); ϕ = 55° 1900-2000 (HA1); ϕ = 54° 2100-2400 (HA1,3)
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data
SE- no data
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 24
10cm flux: 87
Flare: 36/17.2
Ca: no data
Ip: 0
Ia: 0
Solar Regions
15100 S25
15101 N15
Sunspots
(19932) S18 X 1
(19933) S28 X 2
(19934) S36 (ap)2 CMP Jan. 18
(19935) S26 (β)2 CMP Jan. 18

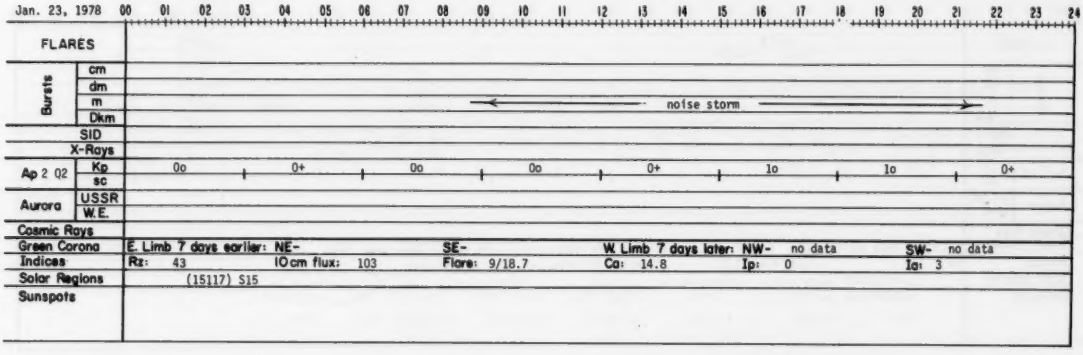

Jan. 18, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 12
Kp
sc
5- 4- 3- 2o 1+ 1o 0+ 1o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data
SE no data
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 14
10cm flux: 88
Flare: 7/20.0
Ca: 10.7
Ip: 0
Ia: 0
Solar Regions
(15105) N31
Sunspots

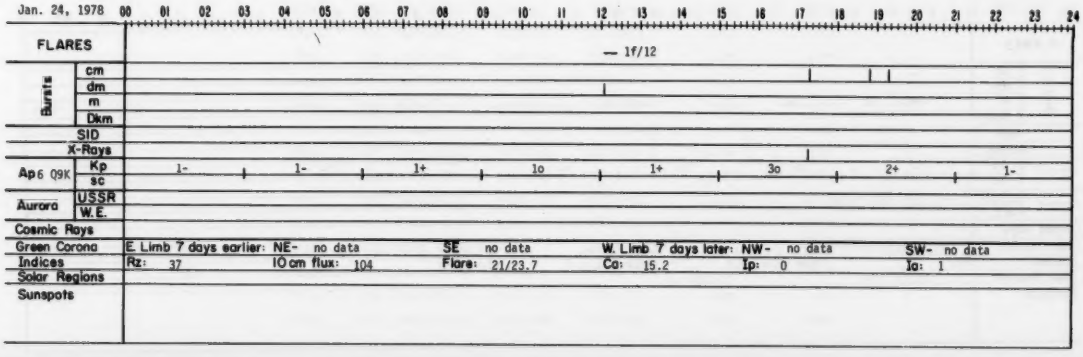

Jan. 19, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 6 Q10
Kp
sc
2+ 2o 2- 2o 2o 1+ 1o 2-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE-
W. Limb 7 days later: NW-
SW- moderately bright
Indices
Rz: 8
10cm flux: 88
Flare: 0/19.7
Ca: no data
Ip: 0
Ia: 0
Solar Regions
(15116) N03
Sunspots

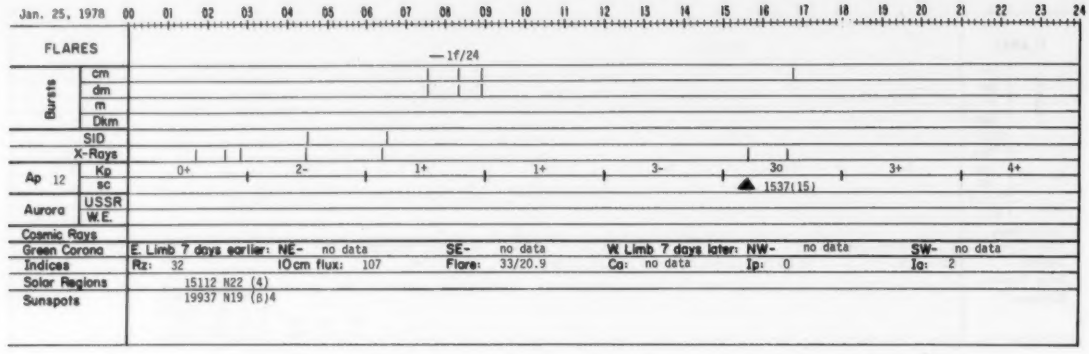

Jan. 20, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap3 Q6
Kp
sc
1- 1- 2o 1- 1+ 1- 0o 0o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE-
SE
W. Limb 7 days later: NW- no data
SW- no data
Indices
Rz: 7
10cm flux: 90
Flare: 0/23.8
Ca: no data
Ip: 0
Ia: 2
Solar Regions
15107 N27 (2)
Sunspots

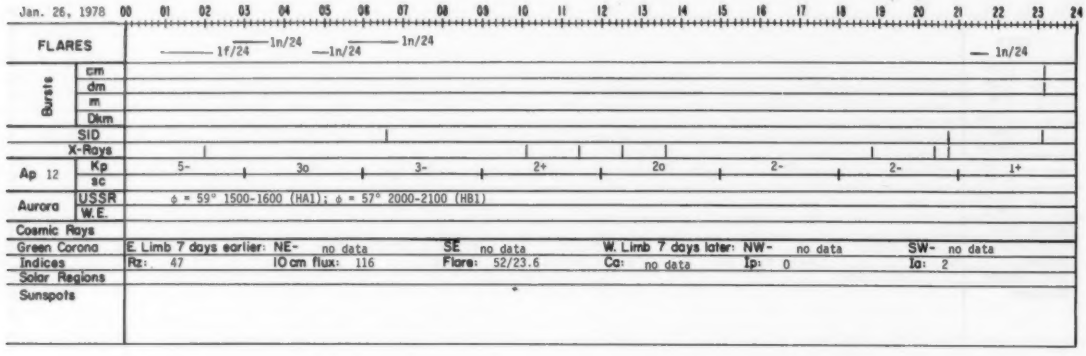

Jan. 21, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 1 Q1
Kp
sc
0o 0o 0o 0o 0+ 0o 0+ 1o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 20 10cm flux: 94 Flare: 20/20.4 Ca: 7.6 Ip: 0 Ia: 0
Solar Regions
Sunspots

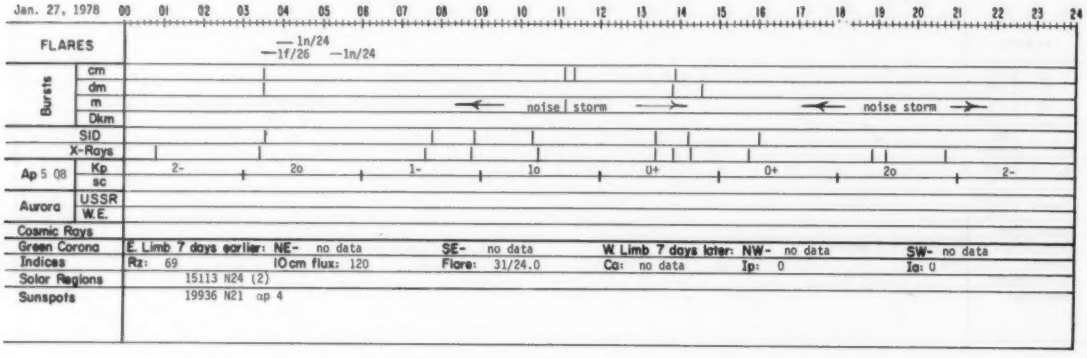

Jan. 22, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
ns
Dkm
SID
X-Rays
Ap 3 Q4
Kp
sc
1o 0+ 1o 1o 1- 0o 0+ 0+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 30 10cm flux: 100 Flare: 13/24.0 Ca: 12.1 Ip: 0 Ia: 0
Solar Regions
15114 N29
Sunspots

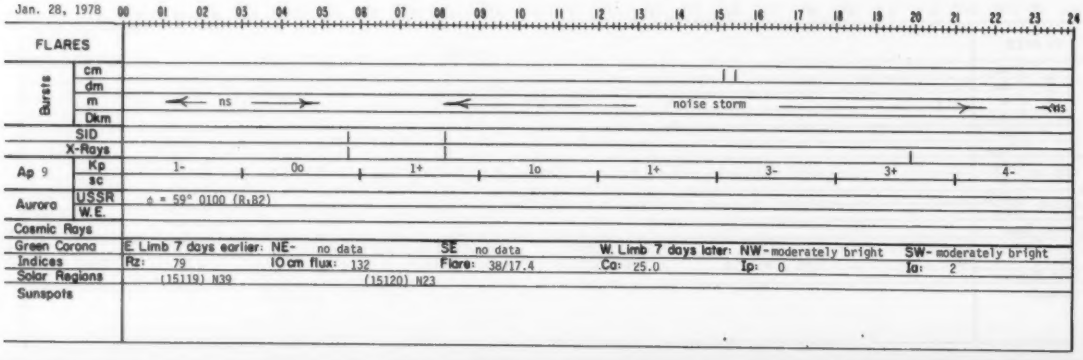

Jan. 23, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 2 Q2
Kp
sc
0o 0+ 0o 0o 0+ 1o 1o 0+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE- W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 43 10cm flux: 103 Flare: 9/18.7 Ca: 14.8 Ip: 0 Ia: 3
Solar Regions
(15117) S15
Sunspots

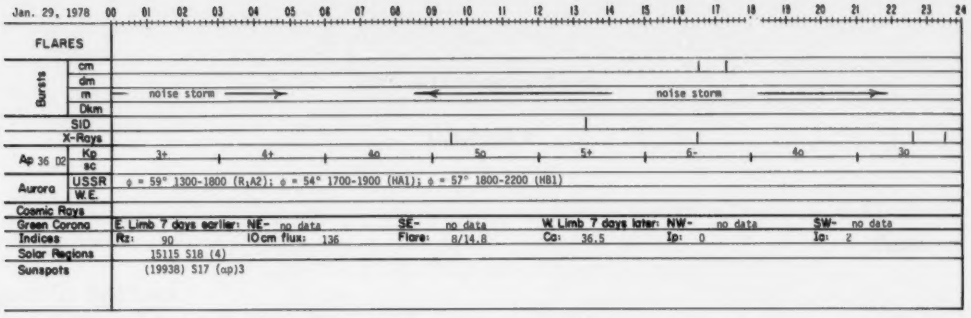

Jan. 24, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/12
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 6 Q9K
Kp
sc
1- 1- 1+ 1o 1+ 3o 2+ 1-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 37 10cm flux: 104 Flare: 21/23.7 Ca: 15.2 Ip: 0 Ia: 1
Solar Regions
Sunspots

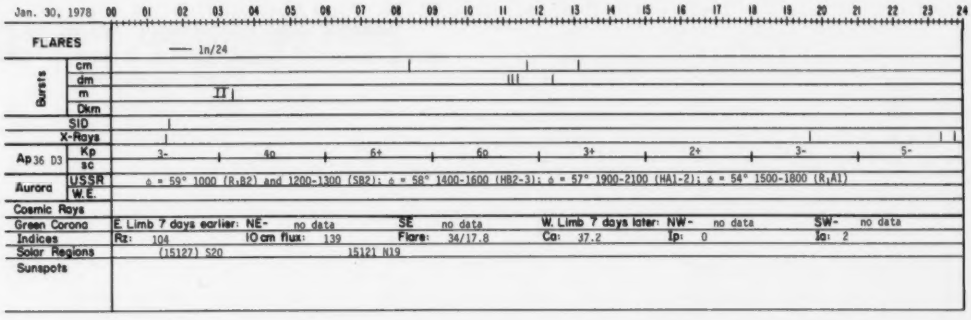

Jan. 25, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/24
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 12
Kp
0+ 2- 1+ 1+ 3- 3o 3+ 4+
sc
1537(15)
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 32 10cm flux: 107 Flare: 33/20.9 Ca: no data Ip: 0 Ig: 2
Solar Regions
15112 N22 (4)
Sunspots
19937 N19 (8)4

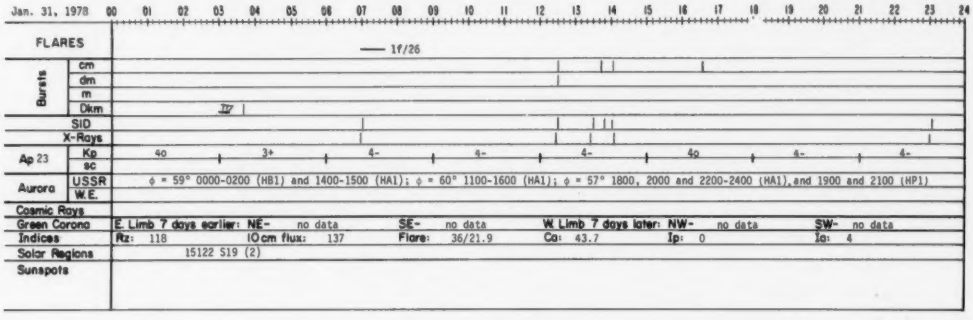

Jan. 26, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/24
1n/24
1n/24
1n/24
1n/24
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 12
Kp
5- 3o 3- 2+ 2o 2- 2- 1+
sc
Aurora
USSR
φ = 59° 1500-1600 (HA1); φ = 57° 2000-2100 (HB1)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 47 10cm flux: 116 Flare: 52/23.6 Ca: no data Ip: 0 Ig: 2
Solar Regions
Sunspots


Jan. 27, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/24
1f/26
1n/24
Bursts
cm
dm
m
noise storm
noise storm
Dkm
SID
X-Rays
Ap 5 08
Kp
2- 2o 1- 1o 0+ 0+ 2o 2-
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 69 10cm flux: 120 Flare: 31/24.0 Ca: no data Ip: 0 Ig: 0
Solar Regions
15113 N24 (2)
Sunspots
19936 N21 αp 4


Jan. 28, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
ns
noise storm
ns
Dkm
SID
X-Rays
Ap 9
Kp
1- 0o 1+ 1o 1+ 3- 3+ 4-
sc
Aurora
USSR
φ = 59° 0100 (R1B2)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- moderately bright SW- moderately bright
Indices
Rz: 79 10cm flux: 132 Flare: 38/17.4 Ca: 25.0 Ip: 0 Ig: 2
Solar Regions
(15119) N39 (15120) N23
Sunspots







REGIONAL FLARE INDEX
INCLUDES ALL FLARES

MC MATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
15081	S19	78/01/02.2	77/12/26	78/01/09	675.78	58.39	79
15095	N16	78/01/03.9	78/01/10	78/01/10	1.71	1.71	2
15083	S19	78/01/04.2	77/12/28	78/01/10	286.44	20.46	43
15090	N38	78/01/05.2	78/01/03	78/01/06	8.78	2.18	3
15096	S35	78/01/05.3	78/01/09	78/01/09	1.02	1.02	1
15087	N17	78/01/05.6	78/01/02	78/01/06	8.75	1.75	2
15088	N32	78/01/06.1	78/01/03	78/01/06	5.80	1.45	2
15086	S24	78/01/06.4	78/01/03	78/01/07	8.60	1.72	2
15089	N21	78/01/06.9	78/01/05	78/01/10	6.29	1.05	2
15092	N17	78/01/09.8	78/01/06	78/01/11	31.66	5.28	5
15093	S28	78/01/09.8	78/01/05	78/01/10	22.75	3.79	7
15104	S24	78/01/11.9	78/01/13	78/01/16	27.12	6.78	8
15097	N20	78/01/12.9	78/01/11	78/01/18	107.27	13.41	27
15100	S25	78/01/18.4	78/01/14	78/01/23	82.62	8.26	29
15112	N21	78/01/25.8	78/01/24	78/01/31	108.83	12.60	29
15113	N24	78/01/27.6	78/01/22	78/01/23	1.86	.93	2
15115	S17	78/01/29.1	78/01/28	78/01/28	6.61	6.61	1

Miscellaneous Data

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Equatorial Indices Dst, May 1978 corrected data	80
Energetic Solar Particles and Plasma	
IMP 7 and 8 Solar Wind Plasma data	
November 1977	81
December 1977	82
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HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

MAY 1978

NASA/GODDARD SPACE FLIGHT CENTER

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-40	-41	-51	-67	-75	-82	-82	-73	-54	-50	-54	-45	-70	-117	-115	-100	-103	-106	-93	-59	-80	-94	-156	-165
2	-124	-153	-146	-142	-133	-127	-147	-157	-155	-153	-158	-150	-156	-164	-141	-131	-123	-116	-103	-101	-101	-94	-85	-63
3	-61	-74	-77	-75	-76	-78	-34	-87	-94	-95	-90	-108	-111	-120	-128	-125	-138	-131	-121	-117	-93	-96	-87	-93
4	-106	-99	-115	-132	-133	-129	-145	-158	-165	-147	-150	-161	-162	-152	-134	-130	-124	-112	-109	-98	-93	-90	-87	-84
5	-82	-76	-74	-72	-71	-74	-73	-74	-76	-75	-73	-70	-66	-62	-62	-62	-58	-53	-53	-51	-50	-55	-59	-63
6	-65	-62	-60	-54	-54	-52	-52	-53	-50	-53	-54	-55	-55	-54	-51	-52	-52	-48	-47	-45	-44	-44	-45	-52
7	-52	-49	-48	-45	-43	-44	-46	-50	-54	-56	-53	-51	-46	-44	-45	-44	-40	-37	-34	-40	-38	-36	-34	-39
8	-39	-34	-31	-34	-33	-32	-31	-37	-41	-40	-38	-43	-46	-37	-35	-30	-24	-24	-23	-18	-16	-23	-7	-2
9	-15	-14	-8	-18	-24	-18	-19	-65	-119	-145	-138	-142	-130	-112	-116	-103	-109	-117	-115	-109	-93	-87	-75	-76
10	-69	-64	-63	-62	-61	-62	-63	-65	-67	-70	-73	-67	-61	-58	-58	-58	-54	-52	-51	-49	-38	-34	-38	-51
11	-50	-48	-49	-52	-69	-73	-71	-78	-84	-80	-80	-81	-74	-67	-71	-70	-70	-70	-67	-61	-58	-54	-54	-61
12	-55	-55	-56	-54	-52	-57	-61	-61	-58	-57	-60	-52	-47	-47	-49	-47	-50	-49	-53	-57	-49	-45	-45	-56
13	-57	-49	-53	-51	-51	-51	-49	-49	-50	-51	-50	-47	-46	-43	-43	-41	-38	-36	-35	-35	-38	-35	-30	-36
14	-36	-38	-36	-41	-40	-43	-44	-39	-36	-39	-36	-35	-33	-32	-31	-32	-33	-33	-33	-35	-31	-33	-40	-38
15	-32	-30	-24	-20	-19	-21	-20	-18	-16	-9	-10	-16	-20	-22	-25	-23	-18	-16	-13	-13	-13	-16	-16	-19
16	-19	-21	-25	-27	-29	-30	-26	-26	-25	-23	-23	-26	-29	-25	-22	-20	-24	-26	-26	-21	-18	-15	-14	-16
17	-16	-16	-19	-22	-21	-27	-31	-33	-30	-28	-26	-25	-27	-29	-27	-25	-23	-19	-18	-16	-22	-25	-23	-22
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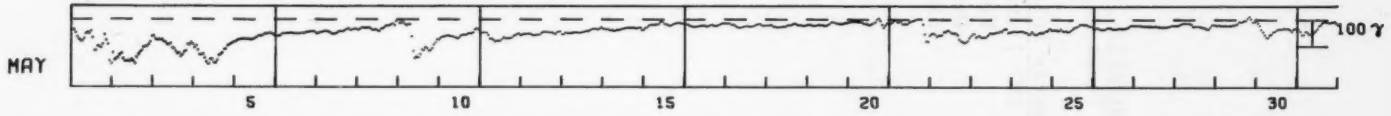

Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month. Hourly values of the provisional Dst index for May 1978 are based on data from Hermanus, Kakioka and San Juan; the magnetometer at Honolulu was not operating during May.

Correction: Please replace the previously distributed monthly table "Hourly Equatorial Dst Values (Provisional)" for May 1978 by the table above. The earlier version contained an error in the procedure of derivation; this has been corrected in the present data. We apologize for the inconveniences that may have been caused by the error.

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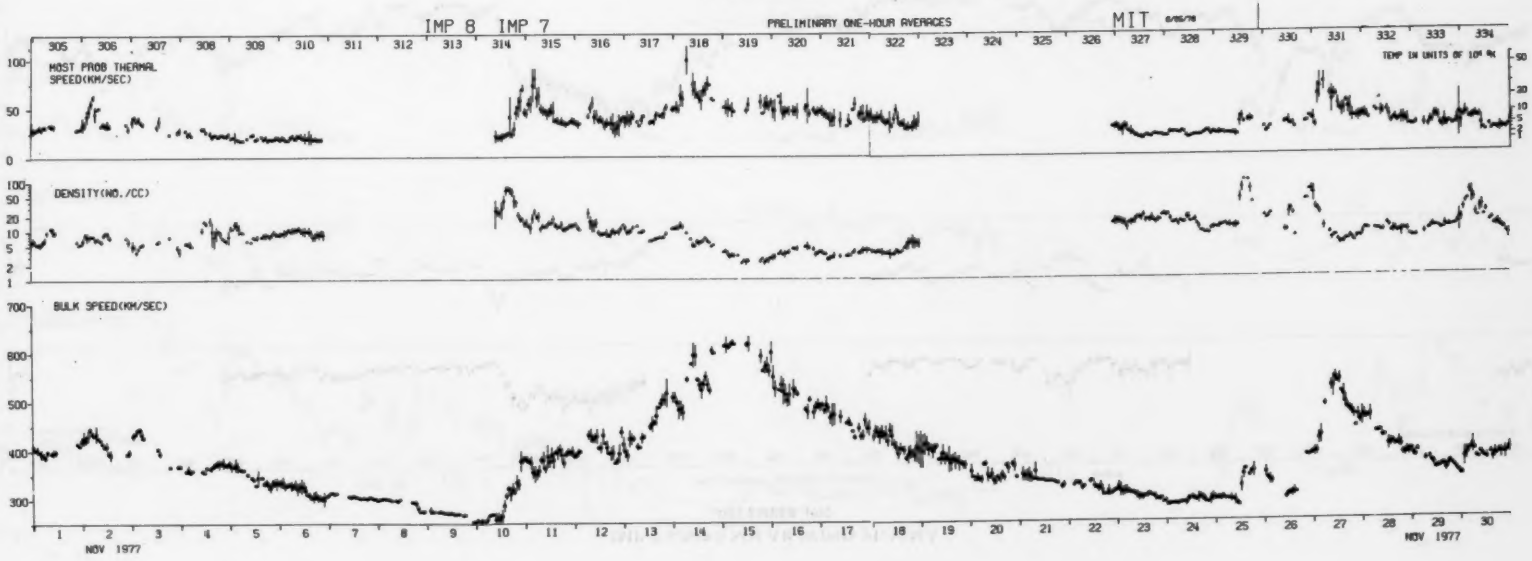
IMP 7 AND 8 SOLAR WIND PLASMA

NOVEMBER 1977



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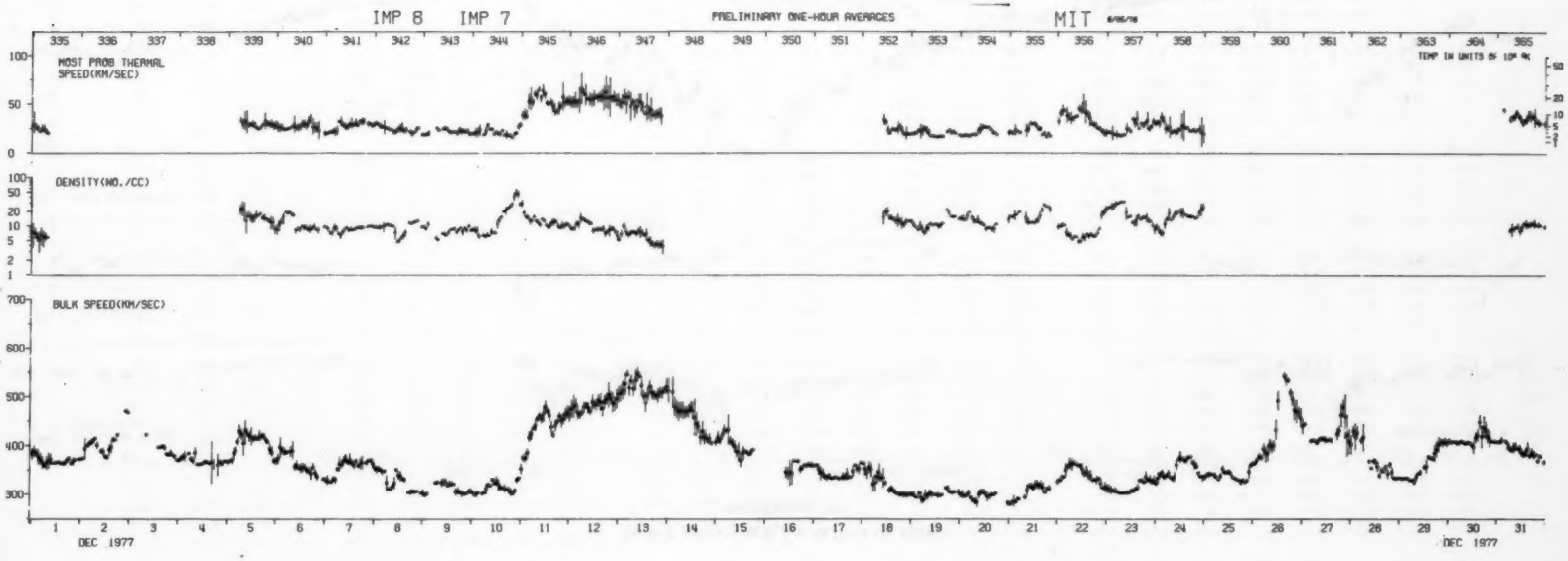

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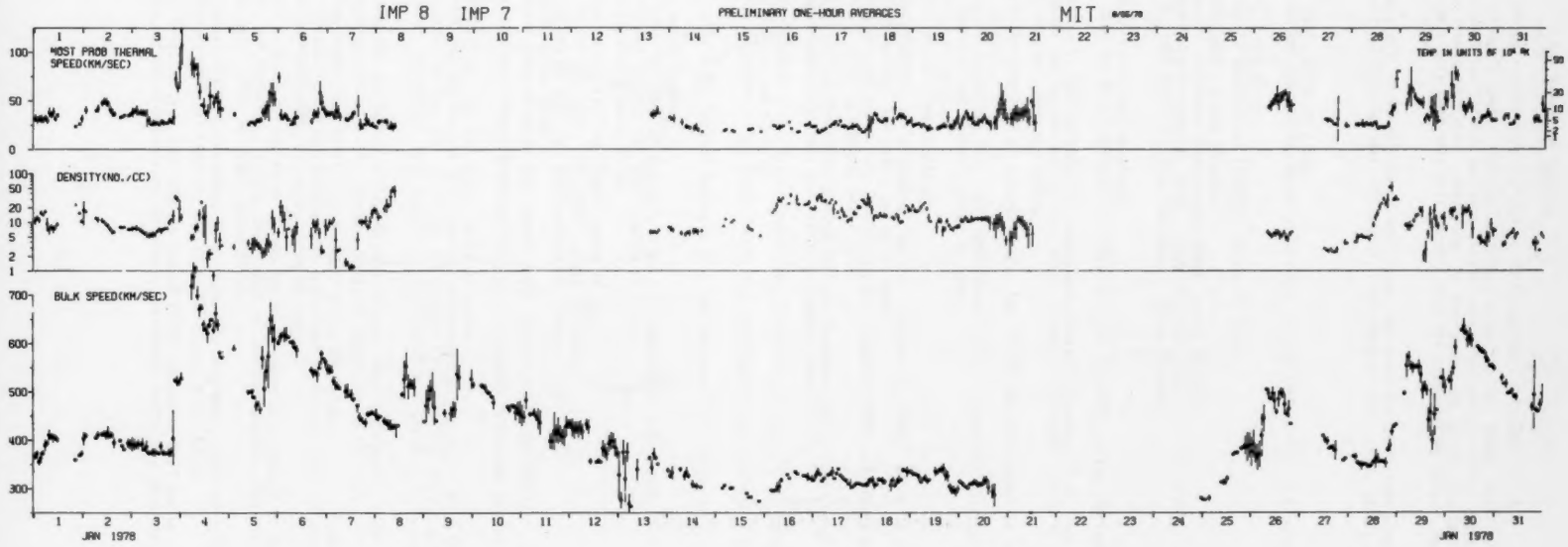

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